Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

0054875

MAR 29 2001

01-RCA-225

Mr. Michael A. Wilson, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
P. O. Box 47600
Olympia, Washington 98504

Dear Mr. Wilson:

TRANSMITTAL OF DRAFT M-091-03 PROJECT MANAGMENT PLAN (PMP) FOR TRANSURANIC/TRANSURANIC MIXED (TRU/TRUM) WASTE

The U.S. Department of Energy, Richland Operations Office (RL) is in receipt of the State of Washington Department of Ecology (Ecology) letter disapproving M-091-03 Change Request 91-00-04 dated October 13, 2000. Pursuant to Article VIII Resolution of Disputes, paragraph 30 of the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement), RL and Ecology are making reasonable efforts to informally resolve this dispute effort at the Project Manager's level, and have agreed to extend the dispute at this level until the April 24, 2001, IAMIT.

As part of the ongoing efforts to resolve this dispute, RL is submitting a draft copy of the M-091-03 PMP (Attachment 1) for TRU/TRUM waste. In addition, RL is submitting a matrix (Attachment 2) which describes how the PMP aligns with Section 11.5 of the Tri-Party Agreement, which outlines what must be included in a PMP. Based on discussions with Ecology on March 27, 2001, RL will submit a follow-up package containing a Tri-Party Agreement change request (as part of the PMP) and follow-up budget information (developmental baseline costs), which is not part of the PMP by April 4, 2001.

RL looks forward to working with Ecology on developing an integrated waste management strategy for TRU/TRUM and other waste streams, and invites further comment on this PMP in order to resolve this dispute prior to the April 24, 2001, IAMIT. If you have any questions or need more information, please contact me at (509) 376-9333, or Ellen Dagan, of my staff, at (509) 376-3811.

Sincerely,

Clifford E. Clark, Acting Program Manager
Office of Regulatory Liaison

RCA:EBD

Attachments

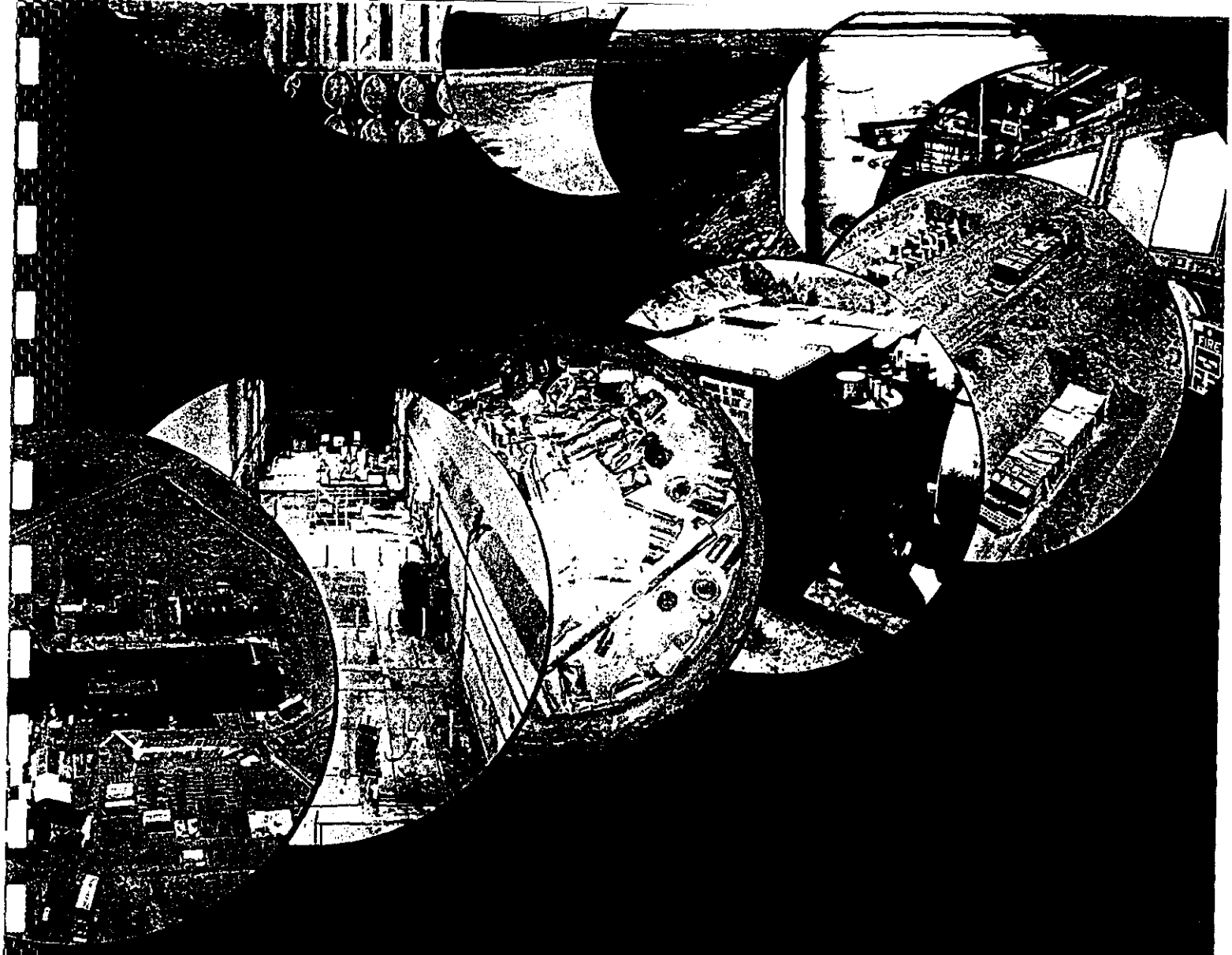
cc w/attachs:
J. H. Richards, CTUIR
L. Cusack, Ecology
F. Jamison, Ecology
R. F. Stanley, Ecology
D. R. Sherwood, EPA
J. S. Hertzel, FHI
O. S. Kramer, FHI
E. Murphy-Fitch, FHI
R. E. Piippo, FHI
T. M. Martin, HAB
P. Sobotta, NPT
M. L. Blazek, Oregon Energy
E. S. Aromi, Jr., WMH
K. L. Hladek, WMH
D. E. McKenney, WMH
R. Jim, YN
Administrative Record

Attachment 1

FH-0101786

M-91 Transuranic Waste Project Management Plan

(Consists of 70 pages including coversheet)



M-91 TRANSURANIC WASTE PROJECT MANAGEMENT PLAN

March 2001

INTRODUCTION

This M-91 Transuranic Waste Project Management Plan addresses Hanford processing of post-1970 transuranic and transuranic mixed waste (TRU/TRUM), which includes remote-handled (RH) and large container contact-handled (CH) waste. This Plan is consistent with the objectives identified in transuranic waste sections of the recently issued *2001 Hanford Waste Management Program Strategic Plan* and the *Hanford Federal Facility Agreement and Consent Order* milestone M-91-03. This Plan focuses on processing RH and large container CH TRU/TRUM waste; information on other transuranic waste cleanup activities is also included.

Two major facilities/capabilities are required for processing Hanford transuranic waste: the Waste Receiving and Processing Facility (WRAP) and the "M-91 Capability". WRAP processes 'small container' CH transuranic waste for shipment to the Waste Isolation Pilot Plant (WIPP). To date, five shipments of transuranic waste have been made to WIPP. The M-91 Capability will support RH as well as large container CH transuranic waste processing to meet cleanup requirements that WRAP cannot provide. The M-91 Capability includes use of the existing T Plant Complex (221-T Canyon, 2706-T) and additional capabilities, if any, that will be defined by the end of FY 2007.

In FY 2000, the Waste Management Division began an aggressive effort to clean out sections of the T Plant Canyon by October 2002 for receipt of K-Basin pit sludge (RH transuranic waste). These efforts include sorting of equipment on the T Plant Canyon deck and in T Plant process cells, equipment size reduction, and packaging, storage awaiting further RH or large container CH TRU/TRUM waste processing, shipping and disposal of low-level and mixed low-level waste in the burial grounds. Based on the forecasted RH and large container TRU/TRUM waste that will require processing, additional cleanout of the canyon and modification of the T Plant Complex will be sufficient to meet M-91 Capability needs. TRU/TRUM waste processing capabilities that T Plant will be modified to perform include: sorting containers (initiated), repackaging containers, nondestructive examination and nondestructive assay, size reduction (initiated), Polychlorinated Biphenyl waste treatment, solidification/neutralization/deactivation, verification/certification, and waste loadout into WIPP approved containers for placement into compliant transportation systems.

WRAP and the T Plant Complex will operate through FY 2032. An estimated 2,500 shipments of Hanford transuranic waste are projected prior to WIPP closure in FY 2034.

This M-91 Transuranic Waste Project Management Plan:

1. Provides background information
2. Recognizes transuranic waste *Hanford Federal Facility Agreement and Consent Order* Milestones
3. Identifies TRU/TRUM waste streams
4. Discusses transuranic waste processing capabilities
5. Provides waste stream process flow diagrams
6. Provides a M-91 activity schedule for processing RH and large container CH transuranic waste &
7. Identifies technology development and deployment needs

We look forward to working together and with our regulators and stakeholders to implement the M-91 Transuranic Waste Project Management Plan.

G. H. Sanders, Director
Waste Management Division
DOE-RL

EXECUTIVE SUMMARY

This M-91 Transuranic Waste Project Management Plan identifies the post-1970 remote-handled (RH) and large container contact-handled (CH) transuranic waste and transuranic mixed waste (TRU/TRUM) streams that will require processing for shipment off-site for disposal in accordance with the requirements of the WIPP waste acceptance criteria. This Plan identifies existing and planned TRU/TRUM waste processing capabilities, provides waste stream process flow diagrams, identifies technology/deployment needs, and provides an activity schedule for M-91 RH and large container CH tranuranic waste processing. Information is included in this plan on other TRU/TRUM waste cleanup activities. The Project Management Plan elements consist of the following:

Background - Segregation of Hanford TRU/TRUM waste began in March 1970 with placement of the waste in retrievable storage in the Low-Level Burial Grounds. Dispositioning of all pre-1970 Hanford waste is through the *Comprehensive Environmental Response, Compensation and Liability Act* (CERCLA) process. In 1982, the definition of TRU/TRUM waste changed from 10 nanocuries per gram to 100 nanocuries per gram; redefining some of the retrievably stored waste low-level. Retrievably stored waste in the Low-Level Burial Grounds is referred to as 'suspect' pending a determination of whether the waste is low-level or TRU/TRUM. An inspection of retrievably stored drums in 1985 and a pilot retrieval of containers in 1994 provided information on container integrity. In 1987, DOE/EIS-0113, *Final Environmental Impact Statement – Disposal of Hanford Defense High-Level* concluded that Hanford newly generated and stored TRU/TRUM waste will be processed at Hanford and disposed at WIPP. In the 1990's studies documented the issues regarding retrievably stored waste container integrity and processing alternatives for post-1970 TRU/TRUM waste.

Transuranic Waste Hanford Federal Facility Agreement and Consent Order Milestones - This Project Management Plan supports *Hanford Federal Facility Agreement and Consent Order* (TPA) Milestone M-91-03. All TRU/TRUM waste TPA milestones are identified.

Transuranic waste streams - TRU/TRUM waste is currently stored in the Central Waste Complex (CWC), retrievably stored in the Low-Level Burial Grounds (LLBG), or is forecasted from activities related to Hanford cleanup. Potential sources of additional TRU/TRUM waste are also identified. Approximately 3,000 containers representing 1,600 cubic meters of TRU/TRUM waste are currently stored in the CWC.

Approximately 38,000 containers of suspect TRU/TRUM waste totaling 15,000 cubic meters of waste are stored in the 200 Area LLBG. The LLBG containers are retrievably stored and are both CH and RH waste. Fifty percent of the suspect retrievably stored TRU/TRUM waste containers are assumed to be low-level waste. In addition drums were also categorized as TRU/TRUM as a conservative measure rather than by assay. A preliminary waste retrieval plan will be established in FY 2002, and the final plan will be issued in FY 2005 incorporating the Records of Decision of the Solid Waste EIS. All drums buried between 1970 and 1988 will be retrieved by the end of FY 2014. Boxes and other containers will remain in a safe configuration in the burial grounds awaiting processing through the M-91 Capability starting in FY 2013.

Approximately 17,000 cubic meters of contact and RH TRU/TRUM waste is now forecasted. Approximately 30 percent of the waste is RH and large container CH TRU/TRUM. These volumes are considered within the existing and planned TRU/TRUM waste processing capabilities.

Transuranic waste processing capabilities - Two major processing facilities/capabilities are required for cleanup of Hanford transuranic waste; the Waste Receiving and Processing Facility (WRAP) and the 'M-91 Capability'. WRAP processes 'small container' CH TRU/TRUM waste for shipment to the Waste Isolation Pilot Plant (WIPP). To date, five shipments of TRU/TRUM waste from WRAP have been sent to WIPP.

The M-91 Capability will support RH TRU/TRUM waste cleanup requirements as well as CH TRU/TRUM waste processing to meet cleanup requirements that WRAP cannot provide (e.g. boxed waste processing). The M-91 Capability includes use of the existing T Plant Complex (Canyon, 2706-T) and additional capabilities, if any, that will be defined by the end of FY 2007.

In FY 2000, the Waste Management Division began a aggressive effort to cleanout the T Plant canyon by October 2002 for receipt of K-Basin pit sludge. Based on the forecasted RH and large container TRU/TRUM waste that will require processing, additional cleanout and modification of T Plant is sufficient to meet Hanford needs. TRU/TRUM waste processing capabilities that T Plant would be modified to perform include: sorting containers (initiated), repackaging containers, nondestructive examination and nondestructive assay, size reduction (initiated), Polychlorinated Biphenyl waste treatment, solidification/neutralization/deactivation, verification/certification, and waste loadout into WIPP approved containers for placement into compliant transportation systems. Based on the addition of these capabilities to T Plant, no plans are being made to commercially process M-91 RH and large container TRU/TRUM waste.

Required capacities for T Plant processing will be affected by many external factors, including Records of Decision for the *Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement* and the *Final Waste Management Programmatic Environmental Impact Statement*, the Canyon Disposition Initiative (CDI), the PUREX Tunnel ROD and/or RCRA closure plans, the 618-10/11 ROD, and policy decisions pertaining to WIPP.

WRAP and T Plant will operate through FY 2032. An estimated 2,500 shipments of Hanford TRU/TRUM waste are projected prior to WIPP closure in FY 2034.

Waste stream process flow diagrams - Process flow diagrams for dispositioning existing and forecasted TRU/TRUM waste streams are provided. The processing locations are defined to be consistent with the TPA milestones M-91-02 (WRAP), M-91-06-T01 (M-91 Capability), and M-91-08-T01 (M-91 Capability).

M-91 activity schedule for processing RH and large container CH transuranic waste - A M-91 activity schedule for processing RH TRU/TRUM waste is attached. The schedules identify key dates and identifies the critical path. Near term actions are discussed including the authorization bases for retrieval, and WIPP certification plans for laboratory support and RH TRU receipt at WIPP.

Technology development/deployment needs - An engineering study will be prepared to survey available technologies (i.e. size reduction) required for processing of TRU/TRUM waste at T Plant. In addition, alternative analyses will be prepared to address new technology needed for waste retrieval from the LLBG and TRU caissons. Ongoing technology efforts include the deployment of the Plasma Arc Torch, deployment of the LaBounty shears, and EM-50 size reduction demonstration and deployment.

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BACKGROUND

The Atomic Energy Commission (AEC, a DOE predecessor agency) initially defined TRU waste as "wastes with known or detectable contamination of transuranium nuclides". In March of 1970, AEC sites were directed to segregate TRU waste and place the waste in retrievable storage that would allow the waste to be retrieved within 20 years. Before this date, no effort was made to segregate TRU waste from low-level waste (LLW) or to make LLW retrievable.

Dispositioning of all pre-1970 Hanford waste is through the *Comprehensive Environmental Response, Compensation and Liability Act* (CERCLA) process. Pre-1970 waste could potentially be processed through the M-91 Capability; this will be considered in plans to define future capability needs by 2007.

Until 1982, the TRU waste segregation limit was set at 10 nanocuries per gram and in 1982, the limit was changed to 100 nanocuries per gram. This limit statutorily was codified by Congress in 1992. Because of the changing definition of TRU waste, waste generated and stored between 1970 and 1982 could contain less than the current threshold for defining TRU waste of 100 nanocuries per gram. This waste has been termed 'suspect' TRU because of the probability that much of this waste will be designated LLW following verification. However, all containers stored in the LLBG through 1988 are considered suspect until proven to be TRU/TRUM waste. In addition drums were also categorized as TRU/TRUM as a conservative measure rather than by assay. In addition, all RH waste (drum and box) is considered suspect because the capability to reliably determine (by assay) the TRU waste content of these containers has never existed on the Hanford Site.

The Waste Management Division, Office of the Assistant Manager for Environmental Restoration & Waste Management, U.S. Department of Energy, Richland Operations Office manages programmatic Hanford activities related to post-1970 TRU/TRUM waste. M-91 Transuranic Waste Project activities include: storage, retrieval, processing, and certification of TRU/TRUM waste for shipment off-site in accordance with the requirements of the WIPP waste acceptance criteria. The Waste Management Division also has programmatic responsibility for the facilities wherein the M-91 Transuranic Waste Project Management Plan is carried out. Fluor Hanford, Inc. is the operating contractor for the M-91 Transuranic Waste Project.

Figure 1. 1985 Inspection of Tranuranic Waste Drums Stored in the Low-Level Burial Grounds.

In 1985, inspection of TRU/TRUM waste drums stored in the LLBG provided information on container integrity (Fig. 1). Retrieval of suspect tranuranic waste containers began in 1994 with the pilot retrieval of 23 drums from storage in the LLBG and transfer to the CWC (Fig. 2).

This provided additional information on container integrity. In 1996 an additional 306 tranuranic waste drums were removed from storage in the LLBG and transferred to CWC. Retrieval of suspect tranuranic waste containers with in-trench designation (tranuranic waste or low-level waste) began on June 22, 1999 over a year earlier than *Hanford Federal Facility Agreement and Consent Order* M-91-04 date of September 30, 2000.

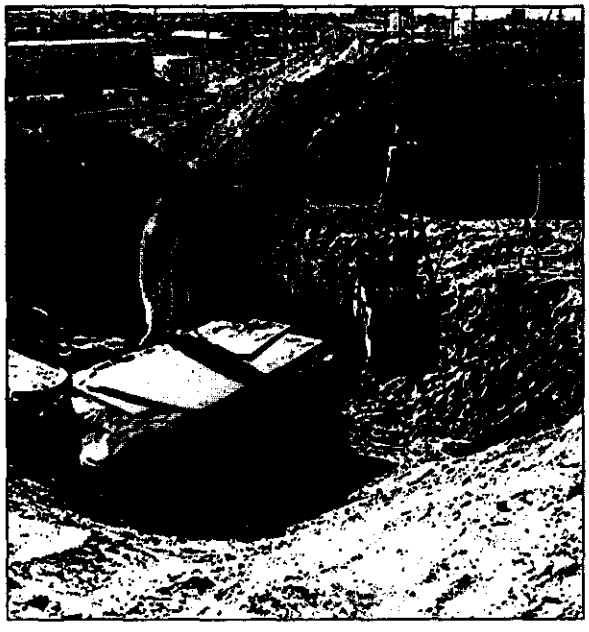


Figure 2. Pilot Tranuranic Waste Retrieval in Fiscal Year 1994.

In 1987, DOE/EIS-0113 (Fig. 3), Final Environmental Impact Statement – Disposal of Hanford Defense High-Level, Transuranic, and Tank Wastes, which commonly is referred to as the Hanford Defense Waste Environmental Impact Statement (HDW-EIS), was issued to address disposition of TRU waste on the Hanford Site. The HDW-EIS states that newly generated and retrievably stored TRU waste will be sent to WIPP for final disposal following processing and certification on the Hanford Site.

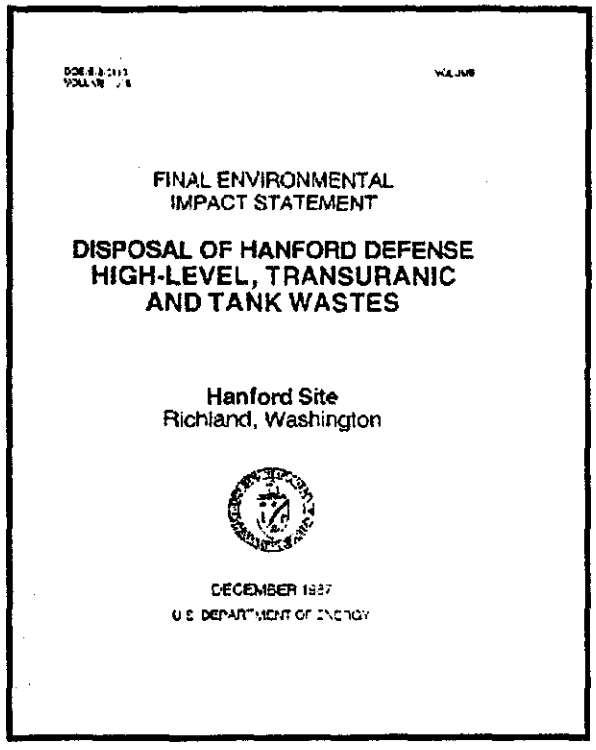


Figure 3. Hanford Defense Waste Environmental Impact Statement (HDW-EIS).

In 1997, DOE/EIS-0200-F (Fig. 4) was issued to address optimal national configuration for: treatment and disposal of LLW and MLLW; treatment and storage of TRU waste; disposal of TRU waste at WIPP; storage of vitrified HLW canisters pending availability of a geologic repository; and treatment of non-wastewater Hazardous Waste.

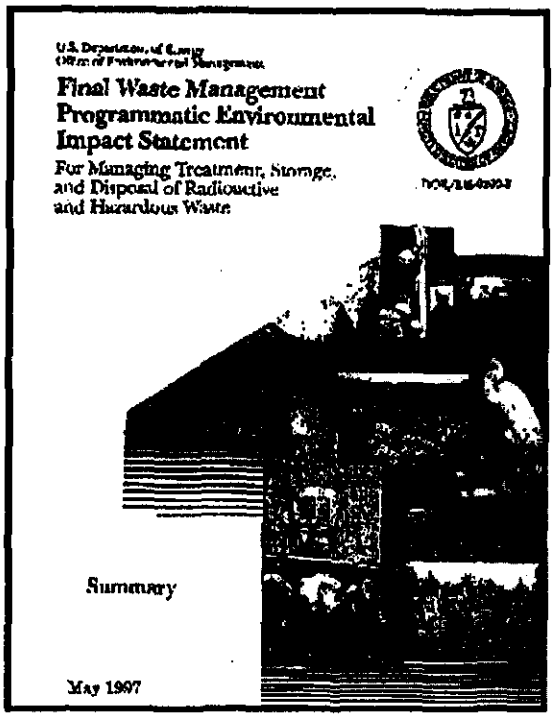


Figure 4. Final Waste Management Programmatic Environmental Impact Statement (WM-PEIS).

The *Hanford Site Solid (Radioactive and Hazardous) Waste Program EIS* (SW-EIS) is currently under development and will address the disposition of post-1970 TRU waste on the Hanford Site (Fig. 5). The SW-EIS will evaluate two options for retrievably stored TRU waste: complete removal and leaving all TRU in place. A regional alternative may be considerated for shipping 6,000 cubic meters from off-site to Hanford prior to disposal at WIPP.

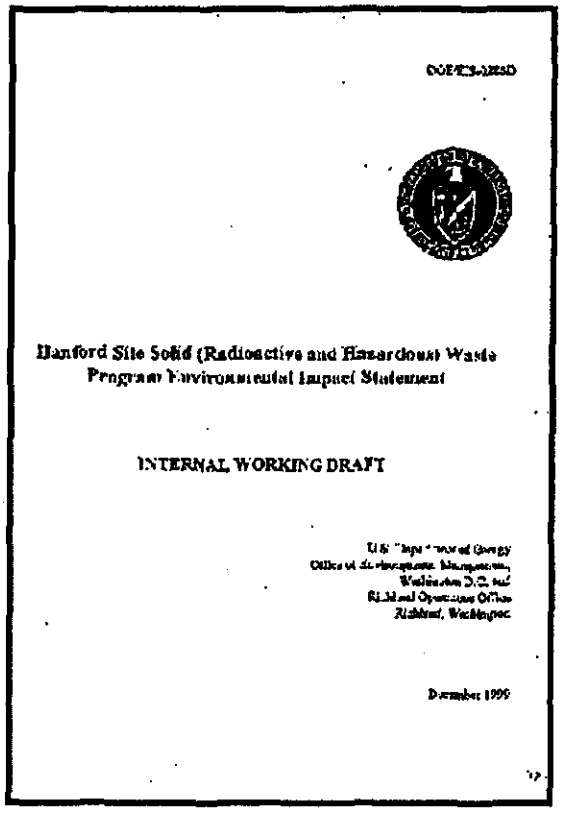


Figure 5. Draft Hanford Site (Radioactive and Hazardous) Waste Program Environmental Impact Statement (SW-PEIS).

In 1990, WHC-EP-0225, *Contact-Handled Transuranic Waste Characterization Based on Existing Records,* attempted to quantify the extent of the TRU/TRUM waste management workscope. This study concluded that there are uncertainties surrounding the projected waste volumes because of inadequate or incomplete records retained during the early Hanford Site operations.

In 1995, WHC-SD-WM-ES-341, *Solid Waste and Materials System Alternatives Study,* presented alternatives to provide the necessary facilities to satisfy Tri-Party Agreement Milestone M-33-00. M-33-00 established the requirement to submit a change package for acquisition of new facilities, modification of existing facilities, or modification of planned facilities for storage, processing, and/or disposal of solid waste and materials. Subsequent to this

study, HNF-2063, *Trade Study for the Processing, Treatment, and Storage of Hanford Site Solid Waste Streams That Have No Current Path Forward,* evaluated alternative locations or facilities for the processing, treatment, and storage of the Hanford Site solid waste streams.

The Alternatives Study identified several options for TRU/TRUM waste streams that could not be processed with current of planned capabilities. This exhaustive study provided the bases for establishing the TPA M-91 Milestones.

Five alternatives were evaluated in detail:

- Single new facility integrating storage and processing needs;
- Multiple new modular facilities integrating storage and processing needs;
- Multiple existing facilities integrating storage and processing needs;
- Maximizing use of the Washington Nuclear Plant 1 Facility (now Energy Northwest) integrating storage and processing needs;
- Current planning baseline.

The alternative that utilized multiple existing facilities was identified as having the lowest programmatic or regulatory uncertainties and risk. It was also the lowest projected cost of the alternatives, with the exception of the WNP-1 alternative.

In 1996, WHC-SD-WM-RPT-060, *Solid Waste Program Technical Baseline Description,* described a program to receive, store, treat, decontaminate, and dispose of radioactive/nonradioactive waste and the required activities and technical challenges inherent in this process. This program addressed, in detail, the planned retrieval of TRU waste from trench 4 of the 218-W-4C LLBG and the planned removal of RH TRU waste stored in dry caissons in the 218-W-4B LLBG.

The HDW-EIS-ROD, *Disposal of Hanford Defense High-Level, Transuranic, and Tank Wastes, Hanford Site, Richland, Washington; Record of Decision,* promulgates the preferred alternative for a facility to be designed, constructed, and operated on the Hanford Site to sort, process, and repackage retrievably stored and newly generated TRU solid waste for shipment to the WIPP. The WRAP Facility was subsequently constructed to provide for verification, characterization, treatment, and repackaging of CH low-level, low-level mixed, TRU, and TRUM waste in drums.

Transuranic Waste *Hanford Federal Facility Agreement and Consent Order* Milestones

Change Number M-91-96-01 of the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) established a new major milestone (M-91-00) "to complete the acquisition of new facilities, and modification of existing facilities necessary for storage, treatment/processing, and disposal of all Hanford Site TRU/TRUM, low-level mixed (LLM), and Greater-Than-Category 3 (GTC3) wastes." M-91-03 is an interim milestone requiring a project management plan (PMP) to be submitted to the Washington State Department of Ecology (Ecology) for all major project tasks and deliverables pertaining to the acquisition of facilities for the treatment/storage of Hanford Site TRU/TRUM waste.

M-91-00

Complete the acquisition of new facilities, modification of existing facilities, and/or modification of planned facilities necessary for storage, treatment/processing, and disposal of all Hanford Site TRU/TRUM, LLMW, and GTC3. Due date TBD

M-91-01

Complete the acquisition of new facilities, modification of existing facilities, and/or modification of planned facilities necessary for storage, treatment/processing prior to disposal of all Hanford Site post-1970 TRU/TRUM. Due date TBD

M-91-02

Initiate processing of contact handled TRU/TRUM waste at Waste Receiving and Processing Facility/WRAP I (contact handled, small container). Due date 12/31/1998 (Complete 9/18/1998)

M-91-03

Submit Hanford Site TRU/TRUM Waste Project Management Plan (PMP) to Ecology pursuant to Agreement Section 11.5. Approval of the TRU/TRUM PMP and accompanying Agreement change request will establish all major project tasks and deliverables for treatment/storage of Hanford Site TRU/TRUM including commercial sector management, modification of existing facilities, and construction of new facilities. Due date 6/30/2000

M-91-04

Complete construction of small container CH TRU/TRUM retrieval facility(s) and initiate (Project W-113) retrieval of small container TRU/TRUM from 200 Area burial grounds. During initial facility operations, contact handled small container integrity will be evaluated and data used in the further development of the retrieval campaign. Due date 9/30/2000 (Completed 7/22/1999)

M-91-05-T01

Complete and submit TRU/TRUM retrieval and processing facility engineering study/functional design criteria study to Ecology. The TRU/TRUM engineering/functional design criteria study will cover activities/facilities not considered commercially viable as documented in the approved TRU/TRUM PMP and associated agreement change requests. Due date 12/31/2002

M-91-06-T01

Award necessary privatized contracts for processing RH and large size TRU/TRUM. Due date 9/30/2003 (T Plant has been identified as the M-91 Capability - see Figure 6)

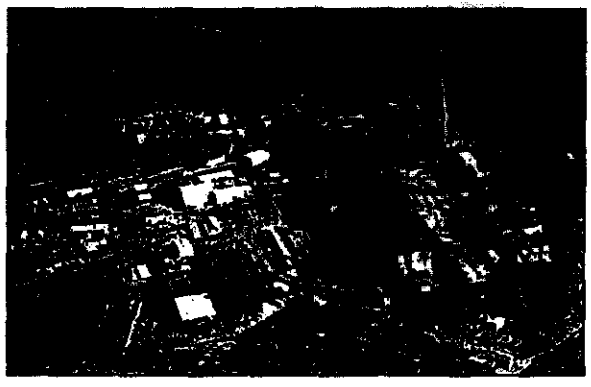


Figure 6. T Plant Complex.

M-91-07

Complete Project W-113 for post 1970 CH TRU/TRUM retrieval. Due date 9/30/2004

M-91-08-T01

Complete construction and initiate hot operations of RH and large sized TRU/TRUM processing facility (A final acquisition schedule for this facility will be established as an interim milestone no later than December 2000. Due date 6/30/2005 (Sorting and size reduction of equipment has been initiated at T Plant - See Figure 7)

Figure 7. Size Reduction of Equipment Stored in the T Plant Canyon Preparing for Receipt of K Basins Sludge.

M-91-18

Transmit the T Plant sludge storage conceptual design document (CDD) to the Washington State Department of Ecology. The CDD will define the T Plant sludge storage scope (and associated cost and schedule estimates) necessary to prepare T Plant for receipt of K Basin sludge, and for sludge storage in compliance with applicable regulations including Washington's hazardous waste management act. On receipt, the CDD will be utilized in establishing additional M-91 compliance milestones, leading up to the readiness of T Plant to receive K Basin sludge (Fig. 8). This interim milesone is completed upon transmittal of the CDD to Ecology. Due date 9/29/2001

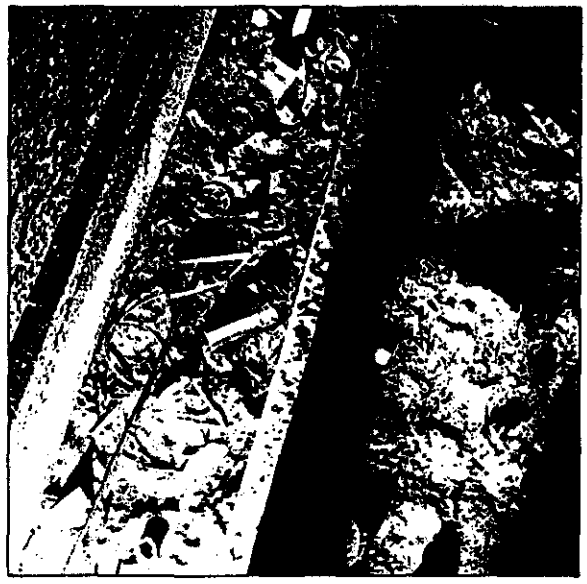


Figure 8. K-Basin Sludge.

M-91-19-T01

Complete physical activities at T Plant necessary to store floor and pit sludge (Fig. 9). This target is complete upon declaration of comletion of modifications required to store floor and pit sludge in T Plant. Due date 9/30/2002

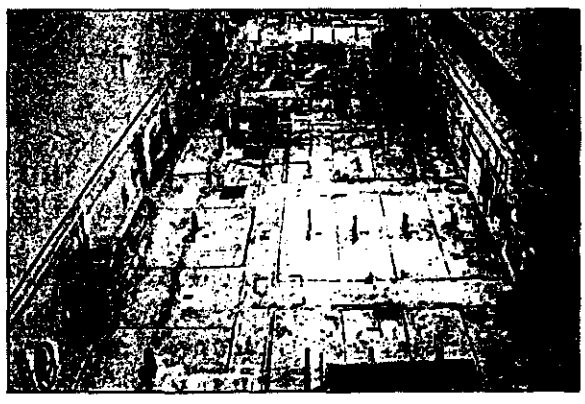


Figure 9. Cleanout of the T Plant Canyon.

M-91-20

T Plant is ready to receive the first canister of K Basins floor and pit sludge. This interim milestone will be complete when all T Plant

readiness activities have been completed to accept pit and floor sludge. Readiness is defined as the issuance of the readiness to proceed letter by the apporval authority. Due date 12/31/2002

M-91-21-T01

Complete physical activites at T Plant necessary to store canister and fuel wash sludge. This target is complete upon the declaration of completion of modifications required to store canister and fuel wash sludge in T Plant. Due date 11/29/2003

M-91-22

T Plant is ready to receive canister and fuel wash sludge from K Basins. This interim milestone will be complete when all T Plant readiness activities have been completed to accept canister and fuel wash sludge. Readiness is defined as the issuance of the readiness to proceed letter by the apporval authority. Due date 2/29/2004

Transuranic Waste Streams

Of the TRU/TRUM waste stored at DOE sites, the Hanford has approximately 15% (16,500 m^3) of the CH and 10% (200 m^3) of RH TRU waste. This includes 15,000 m^3 of suspect TRU waste in retrievable storage. The Waste Management Program is projected to receive from onsite generators 10% (16,000 m^3) of the CH and 22% (800 m^3) of the newly generated RH TRU waste.

Approximately 30 percent of the Hanford transuranic waste is RH and large container CH TRU/TRUM.

TRU/TRUM waste is currently stored in CWC, retrievably stored in the LLBG, or is forecasted from activities related to Hanford cleanup. These volumes are within the existing and planned TRU/TRUM waste processing capabilities. Potential sources of TRU/TRUM waste at Hanford could result from Hanford facilities Records of Decision and will determine if additional TRU/TRUM waste processing capability is required.

Waste Stored in the Central Waste Complex

Figure 10. Central Waste Complex Tranuranic Waste Storage.

Approximately 3,000 containers representing 1,600 cubic meters of TRU/TRUM waste are currently stored in CWC (Fig. 10). Two thousand of these containers are non-mixed transuranic waste and 800 are mixed transuranic waste.

CWC (Fig. 11) provides compliant storage of LLW, MLLW and Tranuranic waste. CWC has a storage capacity of 17,000 m^3 (81,000 55-gallon drum equivalents).

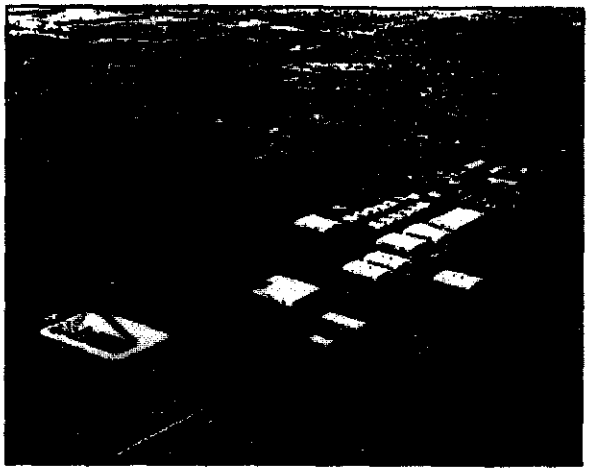


Figure 11. Central Waste Complex.

Waste Retrievably Stored

Approximately 38,000 containers of suspect TRU/TRUM waste representing 15,000 cubic meters are retrieveably stored in the 200 Area LLBG. The LLBG containers are retrievably stored and are both CH and RH waste (Figures 12 and 13). A significant percent of the retrievably stored containers are assumed to assay as low-level waste based on the 1982 higher TRU/TRUM waste definition (100 nanocuries per gram versus the previous 10 nonocuries per gram). In addition drums were also categorized as TRU/TRUM as a conservative measure rather than by assay.

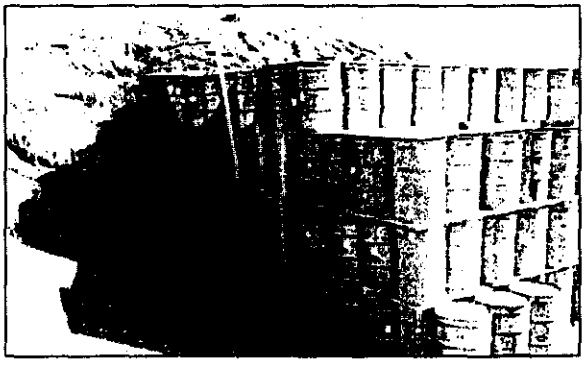


Figure 12. Suspect Transuranic Waste Drum Storage in the Low-Level Burial Grounds.

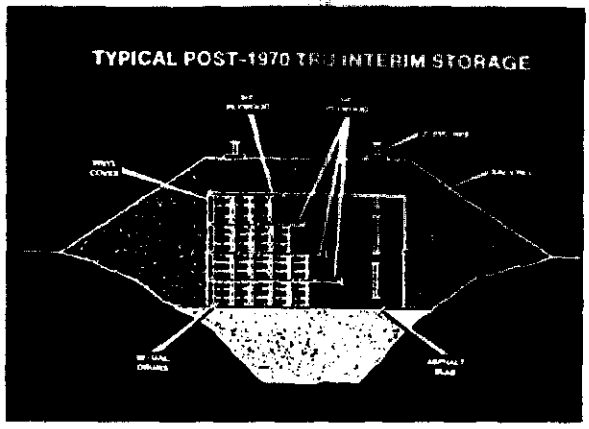


Figure 13. Suspect Tranuranic Waste Drum Storage in the Low-Level Burial Grounds.

A TRU retrieval plan will be established incorporating the Data Quality Objectives process is planned by March 31, 2002. The plan will be modified and finalized by the end of FY 2005 as required for consistency with the issued SW EIS ROD and information gathered from test digs of drums of different ages. The initial TRU retrieval plan will assume that all CH TRU waste is retrieved and sent to WIPP. The Solid Waste EIS ROD may change this assumption.

Under the plan, retrieval of all exposed drums in open storage will be completed by the end of FY 2001. Test digs of suspect TRU waste drums stored in the burial grounds will examine drums in each storage configuration to test integrity. The initial TRU retrieval plan will assume that no test dig is needed for suspect CH TRU waste drums generated from FY 1981 to FY 1988. Therefore, retrieval of 1981-1988 drums will be initiated in in FY 2003.

A series of test digs in support of retrieval are being considered to answer questions about drum integrity. Results of previous evaluations and established drum corrosion models indicate a potential for container integrity problems. The results of ongoing retrieval operations will be assessed to determine actual test dig scope.

Drums containing high Pu 239 content may be

preferentially removed if practical. (Note: This task is not funded). High content Pu 238 drums disposition (per the TRU Retrieval Plan) remains to be determined. The Carlsbad Field Office will determine the disposition of these Hanford CH TRU wastes by FY 2005. The disposition will either be to send this waste to an off-site facility for processing/reuse or to send the waste to WIPP for disposal.

Suspect TRU that is determined to be LLW will remain in the burial grounds. Fifty percent of the suspect TRU is assumed to be LLW.

Boxes and other containers (Fig. 14) that can not be processed within existing facilities will continue to be stored in a safe configuration in the LLBG awaiting processing through T Plant starting in FY 2013.

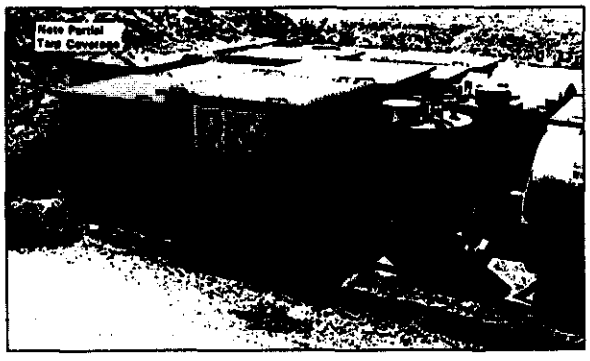


Figure 14. Large Container Transuranic Waste stored in the Low-Level Burial Grounds.

Retrieved 618-10/11 burial grounds waste processing will be consistent with the CERCLA ROD and the engineering options study to be completed by the end of FY 2002. If required by the ROD, CH TRU waste from 618-10 and 618-11 will be processed in WRAP or T Plant (depending on package size). RH TRU waste from 618-10 and 618-11 will be processed in T Plant.

Input from other DOE site activities relating to retrieval (i.e. the Oak Ridge culverts project) will be provided to the 618-10 retrieval contractor as applicable. Retrieval and processing of 618-10 waste is planned to be completed by the end of FY 2014. Lessons learned from the caissons retrieval project (discussed in the next paragraph) will be utilized and provided to the 618-11 retrieval contractor. Retrieval and processing of 618-11 waste is planned for completion by 2018.

A Plan will be developed to retrieve the 200 West Caissons (Figures 15 and 16) using lessons learned from other DOE site activities relating to retrieval (i.e. the Oak Ridge culverts project). Caissons retrieval equipment will be procured by FY 2014. Retrieval of TRU waste from the caissons will be completed by FY 2018.

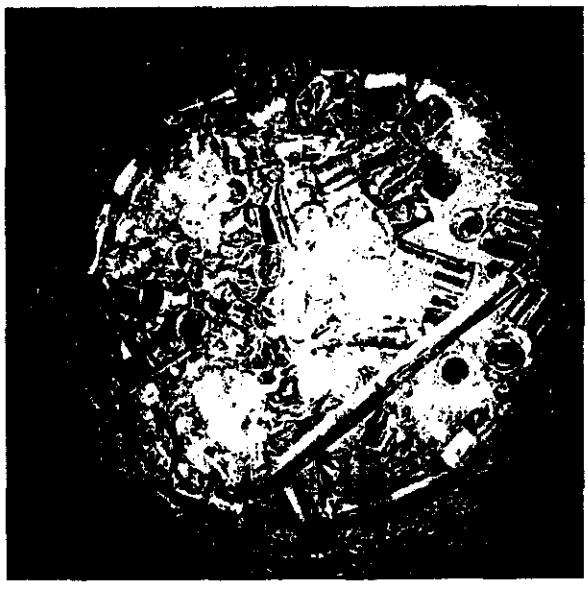


Figure 15. View of Tranuranic Waste inside a Low-Level Burial Grounds Caisson.

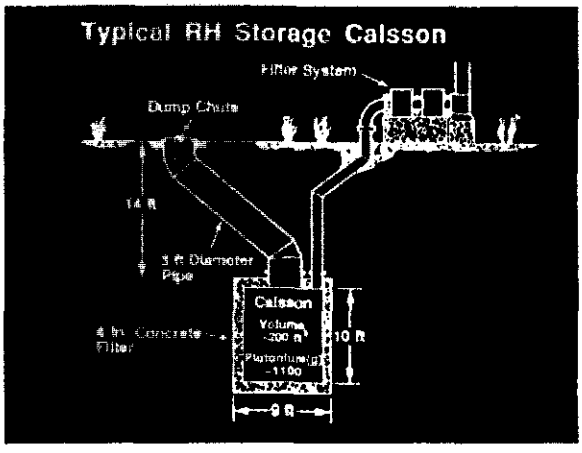


Figure 16. Remote Handled Tranuranic Waste Storage in a Low-Level Burial Grounds Caisson.

The PUREX/PUREX Tunnels ROD (TBD) and/or RCRA closure plan will determine the tunnels waste disposition.

Hanford Federal Facility Agreement and Consent Order Milestone M-91-07 was planned to complete retrieval of approximately 10,000 drums (55-gallon) of suspect TRU/TRUM waste by September 30, 2004. To date, 1,029 drums of suspect tranuranic waste have been retrieved and designated (Fig. 17). Retrieval, designation, and disposition of 600 more TRU/TRUM waste drums is planned for FY 2001.

Figure 17. Suspect Tranuranic Waste Retrieval from the Low-Level Burial Grounds.

Phase II retrieval removes the remaining suspect 55-gallon drum inventory from the LLBG.

Phase II also includes retrieval of small boxes (up to 4' X 4' X 8' and no heavier than 10-ton boxes) and large boxes (10 tons and heavier); retrieval of EBR-II casks; retrieval of waste in the alpha caissons; and retrieval of all other TRU/TRUM waste containers (i.e. RH drums, non 55-gallon drums).

Forecasted Waste

Approximately 17,000 cubic meters of contact and RH TRU/TRUM waste is now forecasted. Forecast TRU/TRUM waste includes activities related to: facility stabilization and cleanup (Fig. 18), maintenance of process equipment, laboratory operations, and Office of River Protection (ORP) tank farms cleanup operations. The portion the TRU/TRUM waste requiring processing at T Plant is the CH volume which consists of large waste items, waste items in boxes (non-drum containers), and liquid waste in drums. The RH portion includes all TRU/TRUM waste containers having dose rates exceeding 200 millirem per hour at contact.

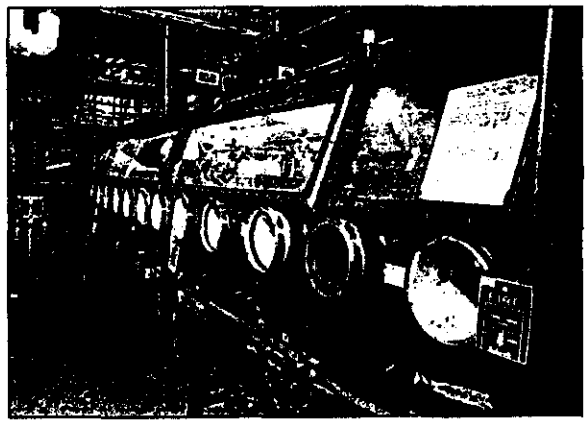


Figure 18. Transuranic Contaminated Glovebox at the Plutonium Finishing Plant.

On-Site sources include the Plutonium Finishing Plant (2,200 cubic meters), K-Basins (390 cubic meters), River Protection Project (2,000 cubic meters), Environmental Restoration (11,400 cubic meters), and miscellaneous streams (1,200 cubic meters).

Waste generated by the Environmental Restoration (ER) Program on the Hanford Site is managed under the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) *of 1980* regulations and therefore is dispositioned under the ER Program milestones. However, TRU waste as forecast by the ER Program is included in this PMP scope, including the 618-10, 618-11 Burial Grounds. The 241-Z-361 tank, managed by the Materials Disposition Program, also is included in this PMP. CERCLA decisions may identify wastes which will be added to required M-91 scope.

The TRU/TRUM waste stream, as defined in M-91-03, is obtained by completing data sorts on the solid waste inventory tracking system (SWITS) and solid waste integrated forecast technical (SWIFT) databases and by soliciting input and information from Hanford Site generating units and regulators.

The SWITS database contains data (e.g., volumes, container information, and radiological, physical, and dangerous waste characteristics) on each container of waste stored in the LLBG and various other Hanford Site facilities as identified in Tables 1 and 2. Waste transfer or shipping records for the stored waste were used to extract waste information for input to the SWITS database.

The SWIFT database is used to forecast future waste stream volumes and characteristics using waste generating unit input. The waste generating units provide basic information directly to the SWIFT, such as the life cycle and the waste classes, and defines any nonstandard container or 'combined' dangerous waste characteristics. For each waste class, the generating unit specifies the containers in which the waste will be stored, the projected volume of waste, the physical form of the waste, the dangerous characteristics of the waste, and the radionuclides in the waste. The SWIFT database is updated annually, published in the SWIFT report (e.g., HNF-EP-0918). Generating unit input is obtained through formal meetings and informal contact and included in SWIFT database updates.

The SWIFT data are validated through a quality control (QC) process that includes approval by appropriate authorities. Significant changes in waste volume from previous years are identified and issues resolved before the report is published.

Summaries of TRU/TRUM waste volumes and containers forecasted are shown in Tables A-3 and A-4. The tables are also color coded to show the wastes going to the WRAP processing facility (M-91-02) and to T Plant or the M-91 Capability (M-91-06-T01 and M-91-08-T01)

Life cycle forecast and stored volumes, as well as other relevant information, for CH and RH TRU/TRUM waste are presented by generator in Table A-1 through A-4. A key showing the description and major sources of the waste packages is found following Table A-5.

To facilitate waste stream data analysis and summary, the stored and forecast containers were grouped into the categories shown. For CH small containers, the standard waste box (SWB) was taken as the upper limit because the SWB is the largest WIPP acceptable CH container. The boxes shaded in light green are the wastes that will be processed through the WRAP facility under M-91-02. The wastes in the light blue shaded boxes will be processed in the M-91 facility under M-91-06-T01 and M-91-08-T01.

Tables A-3 and A-4 shows all existing and forecasted TRU waste volumes by TRU waste type, storage facility/generating unit, and by container category. About two-thirds of the waste destined for T Plant is in existing storage with most of this waste contained in extra-large and large containers primarily stored in the 218-W-3A and 218-W-4C LLBG. The forecasted waste destined for T Plant comes mostly from surplus facility decommissioning and from Plutonium Finishing Plant (PFP)

cleanup.

RH TRU and TRUM waste volumes shown in light blue in Tables A-1 and A-3 are also grouped by storage facility, generating unit, and container category. Most of the total waste volume shown is in large containers in the same burial grounds identified above.

The wastes in Tables A-1 and A-2 also include about 180 cubic meters of PCB contaminated wastes which cannot currently be shipped to WIPP. The WIPP Toxic Substance Control Act (TSCA) disposal decision, planned for April 2005, will determine whether this waste can accepted at WIPP.

Potential Waste Sources

Table A-6 identifies other potential TRU waste generators identified by major and sub-major facilities. Those not forecasted are potential TRU generators which may be waiting on a Record of Decision (ROD) to determine waste disposition (such as PUREX/PUREX tunnels) or which have not yet been included in the forecasts due to a variety of reasons.

The TRU/TRUM waste volumes that are identified Tables A-1 through A-4 include the known and forecasted waste streams. There are uncertainties in both. In retrieving drums of TRU/TRUM waste from the locations in the LLBG, some containers may not be intact. Should this more difficult retrieval scenario become reality, the actual volume of waste to be retrieved could increase significantly. Based upon best engineering judgement, containers buried before about 1976 are at most risk of having degraded containers to the point of concern.

The TRU/TRUM drums for the 1970 to 1976 time period number about 14,500; the estimated total number of drums to be retrieved/processed for final disposition is about 120,000. Should the effective quantity of 1970 to 1976 drums double to 29,000 due to loss of container integrity in the LLBG and some surrounding soil would be scoped up with each degraded drum, there would only be an increase of about 12 percent in the total quantity of drums to be handled. This might entail a second operating shift at WRAP for a portion of the processing time.

Transuranic Waste Processing Capabilities

Two major facilities/capabilities are required for processing Hanford TRU/TRUM waste: WRAP and the "M-91 Capability". An estimated 2,500 shipments of Hanford TRU/TRUM waste are projected prior to WIPP closure in FY 2034.

The National TRU Waste Management Plan issued by the Carlsbad Field Office shows that the WIPP CH TRU/TRUM waste disposal capacity will be about 65 per cent utilized and the RH capacity about 30 percent. Then, even a doubling of the Hanford TRU/TRUM waste volumes would not approach the WIPP disposal capacity.

WRAP

The WRAP processes drums of CH TRU/TRUM waste for shipment to the Waste Isolation Pilot Plant. WRAP (Fig. 19) has automated processes to examine and characterize waste using x-ray (nondestructive examination), gamma, and neutron assay (nondestructive assay) equipment. Repackaging of waste is performed as required to meet WIPP certification requirements. Most of the waste handling operations are performed remotely to minimize exposure of personnel to radioactive materials.

Figure 19. Waste Receiving and Processing Facility.

WRAP also performs nondestructive examination and nondestructive assay of TRU/TRUM waste in standard waste boxes. The facility provides the capability to handle 321-liter drums and 208-liter drums. Boxes not exceeding 2.74 meters long by 1.6 meters wide by 1.7 meters high can be received for NDE and boxes not exceeding 2.43 meters long by 1.5 meters wide by 1.5 meters high can be received for NDA.

The CH TRU waste inventory will be used to balance WRAP throughput needs considering retrieval and newly generated rates.

WRAP processing capabilities include amalgamation of mercury, neutralization for pH adjustment, solidification of free liquids, and macroencapsulation.

Since WRAP processing was initiated in 1998 the following activities have been completed: over 1,900 drums have been nondestructively examined; over 1,699 drums have been nondestructively assayed; etc.

Five shipments of tansuranic waste have been sent from WRAP to WIPP (Figures 20 and 21). Near term processing objectives for WRAP include: certifying for shipment to WIPP a minimum of 400 cubic meters of TRU by the end of FY 2006 and completing 48 shipments to WIPP by the end of FY 2006. Stretch objectives are to certify shipment of an additional 180 cubic meters of TRU and complete an additional 20 shipments to WIPP by the end of FY 2006.

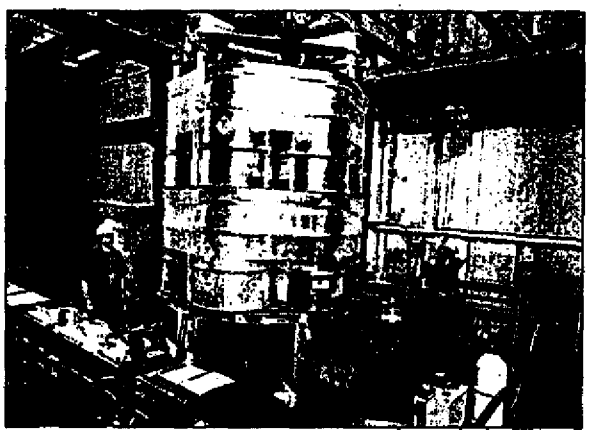


Figure 20. Loading the TRUPACT II with Transuranic Waste Drums in WRAP.

Figure 21. First Transuranic Waste Shipment from Hanford to WIPP (July, 2000).

WRAP will process CH TRU/TRUM waste through FY 2032.

T Plant: the M-91 Capability

The M-91 Capability will support RH as well as large container CH TRU/TRUM waste processing to meet cleanup requirements that

WRAP cannot provide. The M-91 Capability includes use of the existing T Plant Complex (221-T Canyon, 2706-T) and additional capabilities, if any, that will be defined by the end of FY 2007.

The M-91 Capability (T-Plant) plans include early preparation of some portion of the overall required capability. In support of the K Basin sludge storage project, certain parts of the T-Plant canyon will be cleared off and made available for processing operations. Included in these activities is size reduction of large items of TRU waste. This is a required capability for waste streams that will be processed in T-Plant. Storage of the remote handled K Basin sludge, a specific waste stream is readily available to be processed upon final definition of the WIPP remote handled Waste Acceptance Criteria.

The remaining waste streams, including the large packages of contact handled TRU/TRUM from the retrieval effort, will be available to support continued operation of the M-91 Capability after about 2013. Thus, current plans support establishing the full M-91 Capability in that time frame for most efficient operations.

The uncertainties associated with schedules for much of the remote handled TRU/TRUM waste also support a capability in that time frame. The WIPP closure date of 2034 dictates that the processing capability at Hanford must support both that final date and the shipment schedules and rates. The current M-91 Capability planning is fully compatible with the WIPP requirements and plans.

In FY 2000, the Waste Management Division began an aggressive effort to cleanout sections of the T Plant Canyon by October 2002 for receipt of K-Basin pit sludge (RH TRU/TRUM waste). These efforts include sorting of equipment on the T Plant Canyon deck and in T Plant process cells, equipment size reduction, and packaging, storage awaiting further RH or large container CH TRU/TRUM waste processing, shipping and disposal in the burial grounds. Based on the known RH and large container TRU/TRUM waste that will require processing, additional cleanout of the canyon and modification of the T Plant Complex will be sufficient to meet M-91 Capability needs. TRU/TRUM waste processing capabilities that T Plant will be modified to perform include: sorting containers (initiated), repackaging containers, size reduction (initiated), solidification/neutralization/deactivation, verification/certification, and waste loadout into WIPP approved containers for placement into compliant transportation systems.

Previous evaluations of the required capabilities to process the waste streams of the "M-91 Capability" show that all of the needed processing operations could fit into the T-Plant Canyon. The M-33 Alternatives Study showed a process line layout for the T-Plant Canyon and that was estimated to be able to process up to 50,000 cubic meters of remote handled TRU/TRUM waste in the expected (at that time) 17 year lifetime of the project. It also showed that up to 31,500 cubic meters of contact handled TRU/TRUM waste in large containers could be processed in less than 5 years.

A Technology Development size reduction module for developed for the Rocky Flats TRU/TRUM gloveboxes has a foot print of about 1,400 square feet. This "Remote Operated Size Reduction System" has a self-contained HEPA filtered ventilation system and uses plasma arc cutting technology. This is type of equipment that was used in the previous engineering studies for the T-Plant Canyon.

The T-Plant Canyon contains about 32,000 square feet of potential operating space. With a 50 per cent space utilization, more than 10 of the remote operation modules designed for Rocky Flats could be assembled and operated in the Canyon. Thus, the T-Plant Canyon appears to have more than adequate space for the M-91 Capability.

Based on the addition of these capabilities to T

Plant, no plans are being made to commercially process M-91 RH and large container TRU/TRUM waste.

Alternatives for RH and large container CH TRU/TRUM waste processing facilities included modification of T Plant and/or construction of new facilities. A building within the T Plant Complex boundaries, or modification of the buildings (2706-T and canyon area) would appear to be the most viable alternative. Though uncertainities exist, such as the seismic capabilities of the building, use of the existing ventilation systems, stack classifications, and fire protection upgrades, the project risk associated with the T Plant Complex option remains viable. Another uncertainity is that 80 percent of the RH TRU/TRUM waste has yet to be generated making the forecast uncertain. Recent missions changes for T Plant Complex are addressing these uncertainities. If necessary, complete construction of additional M-91 processing capability for TRU by the end of FY 2011 with operation in FY 2013. The Carlsbad Field Office WIPP RH TRU Waste Analysis Plan must be issued to complete M-91 requirements. The existing WIPP permit only addresses CH TRU waste

Today, the T Plant Complex provides processing, verification and repackaging of waste containers. Additional services include sampling of TRU/TRUM waste containers, headspace gas, storage of irradiated fuel assemblies from the Shippingport reactor, and decontamination services for the Site.

Currently, the T Plant Canyon is being prepared for receipt and storage of radioactive sludge from the K-Basins. This entails clearing 10 canyon deck sections; clearing 8 canyon cells; and removing 4 large pieces of equipment from the canyon deck complete cleaning of the necessary T Plant deck area and cells by the end of October 2002. Shippingport fuel will be removed from T Plant by FY 2002. Sludge processing equipment will be evaluated and installed and final preparations completed for receipt of K Basin pit sludge by the end of October 2002. Final preparations will be completed for receipt of K-Basin canister and fuel wash sludge by the end of February 2004.

T Plant will need the following capabilities for CH TRU/TRUM waste processing:

Sorting/Repackaging Large Containers. Approximately 6,900 cubic meters of CH (stored and forecast) large and extra large boxed waste will need sorting and repackaging. Stored waste comprises 98 percent of this volume and consists of approximately 600 containers, all weighing less than 18 metric tons and ranging in size from 2.1 cubic meters to 64.6 cubic meters. The sorting operation will include material handling equipment to open boxes, to separate large items, and to support size reduction of waste items. The final operations performed in the sorting and repackaging area will be loading of waste into certifiable containers and closing the containers.

NDA/NDE. NDA/NDE capability (Fig. 22) will be provided by T Plant for a total volume of approximately 3,900 cubic meters of large container waste.

Figure 22. T Plant will need capabilities similar to the WRAP Linear Diode Array Image of Waste Drum and Contents.

Size Reduction. T Plant will provide the capability for size reduction using manually operated tools for approximately 4,100 cubic meters of large inorganic debris material that does not fit in SWBs. Dimensions and thicknesses of materials to be size reduced will be determined in the engineering study and FDC. Waste boxes constructed of wood, FRP, and fiberboard also could be size reduced. Waste boxes constructed of concrete and metal could be recycled as burial containers for LLW.

Sorting. A second sorting operation will be performed on approximately 8,000 cubic meters of small container waste as well as size reduced waste for the purpose of removing waste items that do not comply with the WIPP waste acceptance criteria. The facility will include material handling equipment to move, open, empty, and close boxes.

PCB Treatment. PCB treatment will be performed in 1 year to treat a volume of 8.8 cubic meters of oil contaminated with PCBs. A specific technology will be selected in the engineering study/FDC (technology survey) from thermal treatment (e.g., molten salt oxidation, vitrification, pyrolysis, steam reforming) or chemical treatment including chemical oxidation, reduction, or dechlorination. Depending on the WIPP permit, a simple process such as solidification might suffice.

Solidification/Neutralization/Deactivation. A process of solidification will be provided over 10 years to convert a total volume of approximately 91 cubic meters of liquid/sludge into solids. Approximately 83 percent of the waste that will be solidified is forecast waste in the form of 241-Z-361 tank sludge. The system will be designed to perform neutralization of corrosives by proper selection of chemical additives. Small amounts of ignitable aqueous solutions could be deactivated by neutralization and solidification in this system. The system will be designed to handle liquids and sludges and will be operated in batch mode.

Certification/Loadout. T Plant will be used for verification/certification and loadout operations of sorted and solidified waste packaged in certifiable containers before shipment to WIPP.

T Plant will need the following capabilities for RH TRU/TRUM waste processing:

Sorting/Repackaging Large Containers. Approximately 300 cubic meters of stored and forecast RH large boxed waste, and approximately 44 cubic meters of ion exchange column waste will need sorting and repackaging. Stored waste represents approximately 50 percent of the large container volume and consists of 65 containers, all weighing less than 18 metric tons and ranging in size from 0.4 cubic meter to 9.1 cubic meters. The sorting operation will include remote material handling equipment to enable opening boxes, to separate

large items, and to support size reduction of waste items. The final operations performed in the sort/repack area will be loading of waste into containers and closing the containers.

Size Reduction. The capability will be needed to perform size reduction, using remotely operated tools, of 185 cubic meters of large inorganic debris material that does not fit in drums. Dimensions and thicknesses of materials to be size reduced will be determined in the engineering study and FDC. Waste boxes constructed of wood, FRP, and fiberboard also could be size reduced. Waste boxes constructed of concrete and metal could be recycled as burial containers for LLW.

Sorting. A second sorting operation will be performed on approximately 425 cubic meters (21 cubic meters per year) of drum and small container waste as well as size reduced waste for the purpose of removing noncompliant waste items. The RH facility will include remote material handling equipment to move, open, empty, and close boxes. The ion exchange columns will be repacked in RH canisters using remote lifting devices.

Solidification/Neutralization/Deactivation. A process of solidification will be provided to convert in 1 year a total volume of 51.2 cubic meters of liquids and/or sludges into solids. All of this waste is forecast, with 49 cubic meters of sludge coming from K Basins in 612 cubic meters of storage containers. Handling equipment will be provided to remove the sludge from the packaging. The treatment system will be designed to handle liquids and sludges and will be operated in batch mode. The treated waste will be packaged in drums.

Verification/Certification. The RH facility will provide the capability to verify if waste packaged in drums (approximately 1,200 cubic meters) meets the 100 nanocuries per gram segregation limit for TRU waste, and also to perform certification of TRU waste before shipment to WIPP.

Loadout. Loadout facilities will be provided to load RH waste into WIPP approved containers for placement into compliant transportation systems (i.e. the Nuclear Regulatory Commission RH72-B shipping canister -Fig. 23).

Figure 23. 72-B Cask.

RH TRU and Large Container CH TRU Retrieval Systems

Retrieval capacity is similar to that for trenches except for caissons, heavy containers, and breached containers. Use of the onsite disposal option for the high-risk waste will simplify retrieval of the remaining waste streams. Retrieval systems will provide the capability to retrieve waste which includes TRU waste boxes up to 18 metric tons in weight and 65 cubic meters in size, currently stored underground in LLBG trenches. A retrieval system will be designed to provide capacity to remove trench soil caps, tarpaulins, plywood or sheet metal coverings, and loading and delivery of boxes to the treatment facilities.

Bases for Capabilities

Annual and total forecast volumes and waste volumes currently in storage on the Hanford Site form the basis for the treatment alternatives and capacities. There is inherent uncertainty

associated with any given waste forecast because the assumptions, goals, and mission driving a waste generating program baseline could change, thereby changing the assumptions that drive the forecast volume estimates. Although uncertainties cannot be eliminated entirely, uncertainties are minimized to the extent practicable by validating the SWIFT data through a QA process that includes conducting peer reviews.

A potential impact of these uncertainties is that the planned capacities of the facilities possibly could be overestimated. In this case, the facilities might need to be maintained in a standby mode. This scenario most likely would reduce the annual operational costs for a given year, but would increase treatment cost/unit volume. For example, RH facilities provide required capabilities that result in excess throughput.

In the unlikely event that the processing capacity is underestimated, the planned facility would be unable to meet all of the waste processing needs based on a 40-hour per week processing schedule. In this case, the facility could be operated up to 24 hours a day to meet additional processing needs. Increasing facility operation would increase the annual cost of operation and maintenance, but could decrease the cost per unit volume. If processing capacity severely is underestimated, additional storage space for the waste might need to be provided and/or constructed.

The waste characterization engineering study may serve to eliminate some of the waste volume uncertainty through detailed research of waste characteristics, which will be used to refine the waste volumes used in the FDC.

WRAP and the M-91 capability processing capability will support cleanup requirements for the DOE Complex, with consideration of State of Washington equity issues. This support would be provided on a cost-reimbursement basis with the generating site paying for incremental costs, as is now the case for disposal of low-level waste from off-site generators.

Waste Stream Process Flow Diagrams

Figures B-1 to B-15, depict the disposition process for the waste streams. The waste was grouped with two primary discriminators: where the waste came from and where the waste will be processed. The waste sources are simply defined as existing (inventory) and future (forecasted). The processing locations are defined to be consistent with the TPA Milestones, M-91-02 and M-91-06-T01/M-91-08-T01, either WRAP or T-Plant (M-91 Capability).

Secondary discriminators are the various waste packages and the radiation intensity of the waste CH or RH. WRAP can only process contact handled TRU/TRUM waste in drums or Standard Waste Boxes (SWBs). T-Plant will process all of the remaining TRU/TRUM waste: remote handled and large containers of contact handled. In addition, T-Plant will also process TRU/TRUM waste that is "unusual" in that special management may be required; e.g. PCB contaminated waste, and contact handled drummed waste that is outside the authorization basis of WRAP.

Several constraints or considerations determine the process flow for this waste. The WIPP certification program establishes requirements for the final waste form and package as well as for much of the actual process. The Waste Acceptance Criteria, Waste Analysis Plan, Project Management Plan, and TRAMPACT all provide requirements for TRU/TRUM waste processing and/or packaging.

The National TRU Waste Management Plan provides rates for TRU/TRUM shipments for both individual DOE sites as well as for DOE

complex-wide shipping capability. DOE complex-wide shipping schedules are established that determine when and how many shipments will be received at the WIPP. Currently, there are two NRC "approved" shipping containers for remote handled TRU/TRUM waste: the 72B cask and the 10-160B cask. The 72B cask allows shipment of approximately three 208 liter drums of remote handle TRU/TRUM waste with a limit of 1000 R/hr radiation limit on the surface of the canister holding the drums. The 10-160B cask can transport up to ten 208 liter drums of TRU/TRUM waste with a lower dose rate on the container surface.

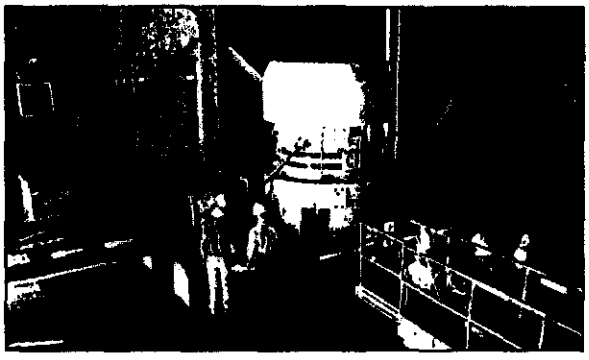


Figure 24. 10-160B Cask.

The TRU Waste Retrieval Plan will establish the schedule for retrieving the TRU/TRUM drums and other containers currently in the LLBG. This Plan will balance the need for waste feed to the processing capabilities, available resources, and integrity of the containers that are "buried."

The TRU Waste Work-off Plan will determine, based upon integration of the various constraints, what waste will be processed when to assure that all requirements can be met. This Work-off Plan and the Retrieval Plan will, out of necessity, be "living" documents that are frequently update to reflect both the progress that has been accomplished as well as any changing requirements.

Currently, there are not WIPP Waste Acceptance Criteria for remote handled TRU/TRUM waste. The existing RCRA Part B Permit for the WIPP does not allow disposal of remote handled TRU/TRUM waste. A modification to the WIPP Part B Permit to allow disposition of remote handled waste is anticipated in the near future.

The Process Flow Diagrams provide the disposition for the TRU/TRUM waste delineated in Tables A-1 through A-4.

M-91 Activity Schedule for Processing RH and Large Container CH Transuranic Waste

The Attachment provides a schedule of activities associated with the M-91 Processing Capability. These activities are consistent with the Master Schedule Logic Diagrams of the Waste Management Program Strategic Plan. The activities are subject to change based upon project progress and application of lessons learned, interface activities outside of the project (such as the WIPP remote handled Waste Acceptance Criteria), budget changes, and Contractual items.

Full scale retrieval of the retrievably stored TRU/TRUM waste containers from the LLBG is identified as an activity that begins in FY 2003; as identified in the Waste Management Program Strategic Plan, that activity is not now funded in the baseline. Impacts to the M-91 Capability will be identified as firm retrieval plans are developed.

The current projection of the timing for the 618 10/11 burial ground remediation is identified. As more definition of the waste streams is obtained and that project scope is established, the impacts to the M-91 Capability will have to be evaluated. It is not expected at this time that significant changes will be required.

Projections of budget and planned processing of TRU/TRUM waste streams still show that the project will be completed within the time that the WIPP operates. Sufficient capacity and capability exist at WIPP to accommodate both the schedule uncertainties and the waste volumes associated with the M-91 Capability.

The Activity Schedule is consistent with the Waste Management Program Strategic Plan and the 2012 Plan. These activities, not all of which are funded, were based upon the Baseline Funding Request of December 2000. The FY 2002, and FY 2003 funding level uncertainties and the Fluor Hanford Contract deliverable due to DOE on 6-30-01, make the activity schedule subject to change.

Near Term Activities

Authorization Bases. Continue to store post-1970 suspect CH TRU waste in the LLBG pending retrieval and the SW EIS ROD. Revise the authorization basis and procedures for test digs and covered TRU waste retrieval by the end of FY 2002. This revision will be consistent with the SW EIS ROD and the TRU Retrieval Plan. (Note: This task is not fully funded) Update the authorization basis as necessary to be consistent with the TRU retrieval plan through FY 2005.

WIPP Certification Plans. WIPP certification (for TRU waste solids) of Hanford sampling and analytical laboratories in support of the PFP and other onsite TRU waste generators will be completed by the end of FY 2006. (Note: This task is not funded). WIPP certification (for RH TRU waste solids) of Hanford sampling and analytical laboratories in support of onsite TRU waste generators will be finished by the end of FY 2013. (Note: This task is not funded) Waste from the 618-10/11 burial grounds will be certified by the Waste Management Program for disposal at WIPP (Fig. 24).

Figure 24. Disposing of Transuranic Waste At WIPP (Los Alamos National Laboratory Shipment)

Waste processing standards and requirements are not defined for all the waste categories or are changing, e.g. WIPP WAC for RH is not developed. Waste stream volumes and characteristics are difficult to determine with certainty. The SW-EIS ROD may affect the project.

Technology Development and Deployment Needs

The "Hanford Site Cleanup Challenges and Opportunities for Science and Technology, A Strategic Assessment," DOE/RL-2001-03, Rev 0, dated February 2001, identifies in the section called Fundamental S&T Opportunities Recommendations:

> "Initiate an integrated effort identify and develop technologies for the retrieval and disposition of remote handled wastes ...also include an emphasis on the S&T required for retrieval of buried RH wastes at the 618-10 and 11 burial grounds."

Retrieval of buried wastes at the 618-10/11 waste disposal sites and other high-activity waste burial sites poses significant technical

challenges and risks. Stakeholders and regulators (HAB 2000) have indicated that advances in the retrieval of RH waste are a high priority. In additions, the ability to characterize and process these wastes could substantially affect the safety and cost-effectiveness of these projects in achieving cleanup objectives. The technology-driven path forward has not been determined at this time for characterizing and retrieving wastes from these sites.

Remediation of the 618-10/11 burial grounds are scheduled to be accomplished during the same time period as retrieval of the RH TRU wastes from the 200 Area Caissons. Therefore, technologies, methods, and scientific understanding developed as applicable to both. In a similar manner, retrieval of high-activity wastes from "culverts" at Oak Ridge most likely will be completed before Hanford undertakes RH TRU retrieval activities. Thus, applying lessons learned both from a technology deployment aspect as well as practical operating experience, will be of benefit to Hanford.

The RH TRU/TRUM wastes retrieved from the LLBG and removed in the future from contaminated facilities require processing for disposition, including characterization, segregation, size reduction, and packaging. Similar needs exist at other DOE sites within the Complex. The unique streams of large containers TRU waste and RH TRU present significant technical challenges but are also subject to a large degree of uncertainty on quantities, characteristics, timing, and physical configuration.

Development of innovative technologies to address these requirements at Hanford , either in the field at waste retrieval or facility deactivation sites or at the T-Plant, are key opportunities.

An engineering study will be prepared, surveying available technology capable of providing handling, size reduction, TRU volume reduction (e.g., decontamination and compaction), and liquid/sludge treatment for identified waste to WIPP disposal requirements. The survey will include emerging or existing technologies in the private sector as well as in the DOE Complex. Viable technologies will be selected and any technology gaps will be identified.

A specific PCB treatment technology will be selected in the engineering study/FDC (technology survey) from thermal treatment (e.g., molten salt oxidation, vitrification, pyrolysis, steam reforming) or chemical treatment including chemical oxidation, reduction, or dechlorination. The Transuranic and Mixed Waste Focus Area is currently investigating Alternative Oxidation Technologies. The results of these investigations will be factored into this effort. Depending on the WIPP permit, a simple process such as solidification might suffice.

An alternative analysis/Project Management Plan (PMP) for retrieval of RH TRU waste stored in the LLBG will be issued by September 30, 2007.

An Alternative Analysis/PMP for retrieval of TRU caissons (200 West Area) will be completed by September 30, 2007.

An alternative Analysis/PMP for retrieval of spent nuclear fuel stored in the LLBG will be completed by September 30, 2012.

A nondestructive assay capability developed through the Transuranic and Mixed Waste Focus Area will be deployed for RH TRU.

Ongoing technology efforts include the deployment of the Plasma Arc Torch, deployment of the LaBounty shears, and EM-50 size reduction demonstration and deployment.

Appendix A:

Waste Stream Data Tables

(consisting of 10 pages)

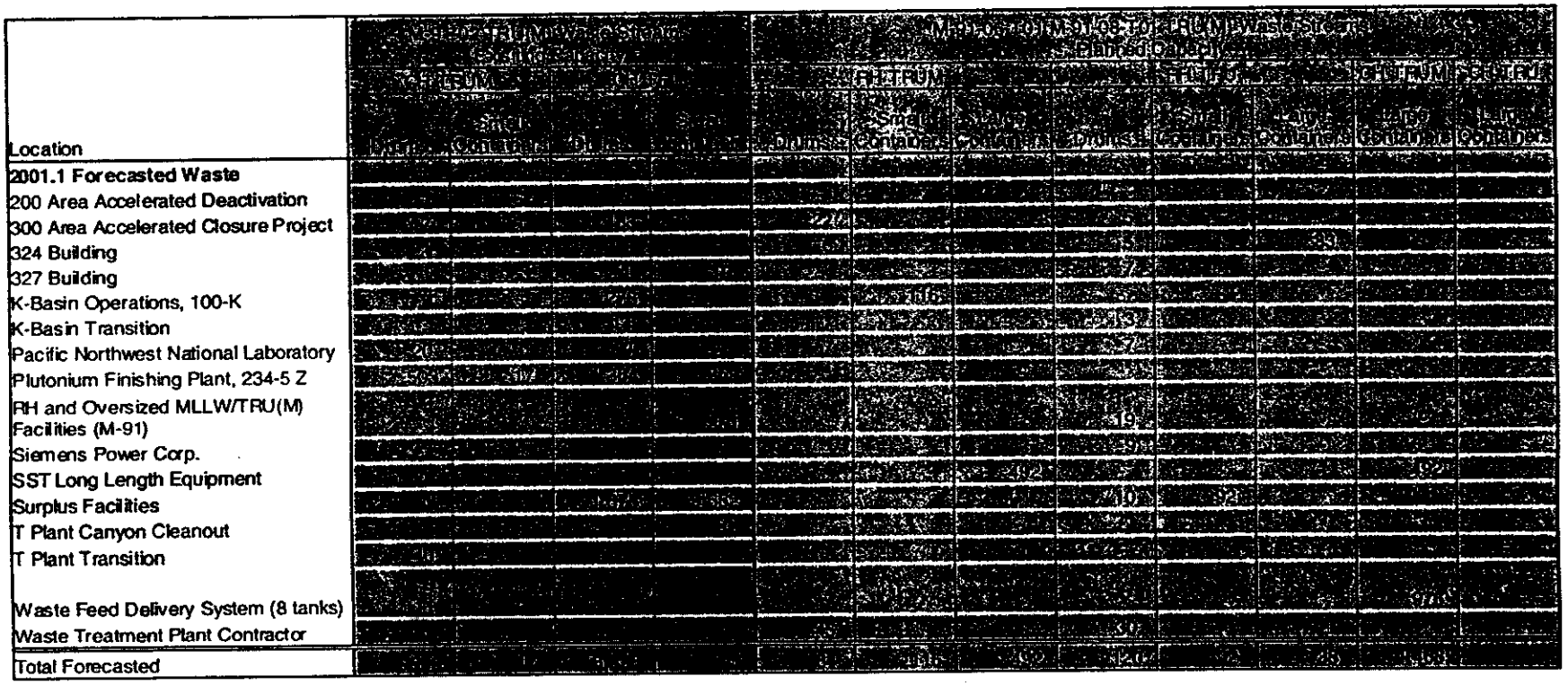
Table A-1: TRU Mixed Waste Streams
Volumes in m^3 ; Inventory 3-08-01

Location	[illegible]				[illegible]							
	[illegible]		[illegible]		[illegible]			[illegible]			[illegible]	[illegible]
	Drums	Small Containers	Drums	Small Containers	Drums	Small Containers	Large Containers	Drums	Small Containers	Large Containers	[illegible]	[illegible]
212N	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Low Level Burial Grounds	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
218E12B	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
218W3A	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
218W3AE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
218W4B	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
218W4C	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Central Waste Complex	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2402WB	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2402WD	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2402WE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2402WF	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2402WG	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2402WH	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2402WJ	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2402WK	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2402WL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2403WA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2403WB	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2403WC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2403WD	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2404WA	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2404WB	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2404WC	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
2420W	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
FS11	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
FS19	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
FS20	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MWS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Total Inventory	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table A-2: TRU Mixed Waste Streams Container Quantities; Inventory 3-08-01

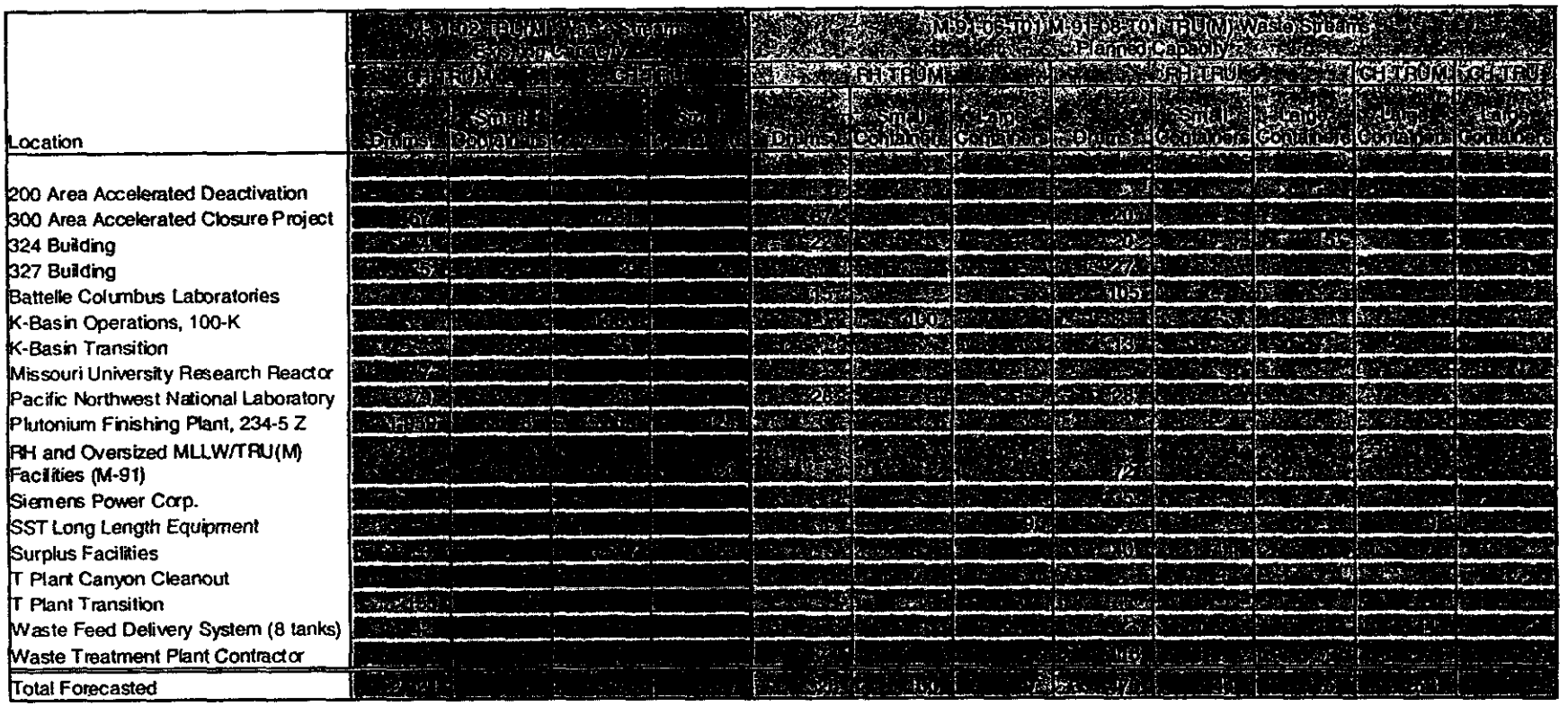
Location	Drums	Small Containers	Large Containers	Canisters	Drums	Small Containers	Large Containers	Canisters
212N								
Low Level Burial Grounds								
218E12B								
218W3A								
218W3AE								
218W4B								
218W4C								
Central Waste Complex								
2402WB								
2402WD								
2402WE								
2402WF								
2402WG								
2402WH								
2402WJ								
2402WK								
2402WL								
2403WA								
2403WB								
2403WC								
2403WD								
2404WA								
2404WB								
2404WC								
2420W								
FS11								
FS19								
FS20								
MWS								
Total Inventory								

Table A-3: TRU Mixed Waste Streams
Volume in m^3; Forecast Feb 01: SWIFT 2001.1



Location
2001.1 Forecasted Waste
200 Area Accelerated Deactivation
300 Area Accelerated Closure Project
324 Building
327 Building
K-Basin Operations, 100-K
K-Basin Transition
Pacific Northwest National Laboratory
Plutonium Finishing Plant, 234-5 Z
RH and Oversized MLLW/TRU(M) Facilities (M-91)
Siemens Power Corp.
SST Long Length Equipment
Surplus Facilities
T Plant Canyon Cleanout
T Plant Transition
Waste Feed Delivery System (8 tanks)
Waste Treatment Plant Contractor
Total Forecasted

Table A-4: TRU Mixed Waste Streams
Container Quantities; Forecast Feb 01: SWIFT 2001.1



Location	M-91-02-TRU(M) Waste Streams Forecasted				M-91-05-TRU(M) M-91-08-TRU(M) Waste Streams Planned Capacity							
	CH-TRU(M)		RH-TRU(M)		RH-TRU(M)			CH-TRU(M)		RH-TRU(M)		
	Drums	Small Containers	Large Containers	Drums	Small Containers	Large Containers	Drums	Small Containers	Large Containers	Large Containers	Large Containers	Large Containers
200 Area Accelerated Deactivation												
300 Area Accelerated Closure Project												
324 Building												
327 Building												
Battelle Columbus Laboratories												
K-Basin Operations, 100-K												
K-Basin Transition												
Missouri University Research Reactor												
Pacific Northwest National Laboratory												
Plutonium Finishing Plant, 234-5 Z												
RH and Oversized MLLW/TRU(M) Facilities (M-91)												
Siemens Power Corp.												
SST Long Length Equipment												
Surplus Facilities												
T Plant Canyon Cleanout												
T Plant Transition												
Waste Feed Delivery System (8 tanks)												
Waste Treatment Plant Contractor												
Total Forecasted												

Table A-5: TRU(M) Container Definition and Quantity Summary

	CH TRU	CH TRUM	RH TRU	RH TRUM
Drums	[redacted]	[redacted]	[redacted]	[redacted]
Small Containers	[redacted]	[redacted]	[redacted]	[redacted]
Large Containers	[redacted]	[redacted]	[redacted]	[redacted]

[redacted]

WRAP Processing Facility (M-91-02)
M-91 Processing Facility (M-91-06-T01, M-91-08-T01)

Table A-5: TRU(M) Container Definition and Quantity Summary

Contact Handled Transuranic Waste (CH TRU)

Drums – Major source of CH TRU waste in drums is inventory located in the 218 retrievably stored trenches. Significant volumes (10-15% each) are forecasted from PFP and 618-10/11 retrieval operations. Wastes will be processed at the WRAP facility.

Small Containers – Primary source is 618-10/11 trenches retrieval, planned to be completed by FY2018. Wastes will be processed in WRAP, prior to shipment to WIPP.

Large Containers - Major source of large container CH TRU is inventory located in the 218 retrievably stored trenches. Wastes will be processed in the M-91 facility.

Contact Handled Transuranic Mixed Waste (CH TRUM)

Drums – Over half of this waste is forecasted to be received from PFP. Waste includes Waste will be processed/packaged at the WRAP facility.

Small Containers – 17 m^3 is forecasted to be generated by the M-91 facility, 9 m^3 is inventory at CWC, and 2 m^3 in the 218 burial trenches. Waste will be processed at the WRAP facility.

Large Containers - Most of the large container CH TRUM waste (84%) is forecasted by tank farm projects with missions to retrieve and transfer waste from the single and double shell tanks for processing, management of existing waste, and continued safe storage. Waste will be processed at the M-91 facility.

Table A-5: TRU(M) Container Definition and Quantity Summary

Remote Handled Transuranic Waste (RH TRU)

Drums – Several sources exist for this waste including, the Waste Treatment Plant Contractor, Battelle-Columbus, M-91 facility, and the 218 trenches. Waste will be processed at the M-91 facility.

Small Containers – Nearly all (99%) of this waste will come from the retrieval of TRU waste in the 618-10/11 burial grounds, planned to be completed by FY2018. Waste will be processed at the M-91 facility.

Large Containers - Most ($114 m^3$) of the large container RH TRU is currently in inventory in the 218 trenches with the remainder forecasted to be generated from 324 building transition activities. Waste will be processed at the M-91 facility.

Remote Handled Transuranic Mixed Waste (RH TRUM)

Drums – Over half of the RH TRUM drum waste is forecasted to be generated by the Waste Treatment Plant contractor. Waste will be processed at the M-91 facility.

Small Containers – Nearly all (99%) of the small container RH TRUM waste consists of the K Basin sludge. The sludge will be packaged in cylinders to be stored at T Plant and processed at the M-91 facility.

Large Containers - Majority of the large container RH TRUM is forecasted to be generated by tank farm project to retrieve, process, and continue safe storage of waste in the single shell tanks. Waste will be processed at the M-91 facility.

Table A-6: Potential TRU(M) Waste Generators, Major and Sub-Major Facilities

Name	Potential TRU (M) Waste	Forecasted	Quantity, m3
REACTORS ON THE RIVER (ROR)			
RoR Groundwater Operable Units			
RoR Soil Site Operable Units			
100 K Area Facilities	Yes	Yes	
REACTORS			
100-B Reactor			
100-C Reactor			
100-D Reactor			
100-DR Reactor			
100-F Reactor			
100-H Reactor			
100-KE Reactor			
100-KW Reactor			
100-N Reactor			
CENTRAL PLATEAU (CP)			
CP Groundwater Operable Units			
CP Soil Site Operable Units	Yes	No	
CP TREATMENT FACILITIES			
LAW/HLW Plant, Phase 1	Yes	Yes	152
LAW Treatment Facility, Phase 2	Yes	No	
HLW Treatment Facility, Phase 2	Yes	No	
200 LEF			
242-A Evaporator			
Liquid Effluent Retention Facility			
200 Area Effluent Treatment Facility			
200 Area Treated Effluent Disposal Facility			
Miscellaneous Streams System			
PUREX	Yes	No	
PUREX Tunnel #1	Yes	No	
PUREX Tunnel #2	Yes	No	
B Plant	Yes	No	
WESF			

Table A-6: Potential TRU(M) Waste Generators, Major and Sub-Major Facilities

Name	Potential TRU (M) Waste	Forecasted	Quantity, m3
PFP	Yes	Yes	2199
REDOX			
U Plant			
T-Plant Facility	Yes	Yes	
224-T	Yes	No	
M-91 Facility	Yes	Yes	
WRAP			
CP STORAGE FACILITIES			
Tank Farm System	Yes	Yes	
Canister Storage Building			
200 Interim Storage Area (ISA)			
Solid Waste Storage			
Central Waste Complex			
Nonradioactive Dangerous Waste Storage Facility			
Transuranic Storage and Assay Facility	Yes	No	
IHLW Storage Modules, Part 2			
CP DISPOSAL FACILITIES			
Solid Waste Disposal			
Low-Level Waste Burial Grounds	Yes	No	
Mixed Waste Disposal Trenches			
ERDF			
Immobilized LAW Disposal Facility			
CP RADIOLOGICAL LABORATORIES			
222-S Laboratory			
WSCF			
CENTRAL CORE (CC)			
CC Soil Site Operable Units	Yes	No	
SOUTH 600 AREA (S600)			
S600 Groundwater Operable Units			
S600 Soil Site Operable Units	Yes	No	
S600 PROCESSING FACILITIES			
300 LEF			
300 Area Treated Effluent Disposal Facility			
307 Retention Basins			
340 Waste Handling Facility			

Table A-6: Potential TRU(M) Waste Generators, Major and Sub-Major Facilities

Name	Potential TRU (M) Waste	Forecasted	Quantity, m3
S600 REACTOR/FUEL FACILITY			
FFTF			
300 Area Fuel Supply System			
308 Facility	Yes	Yes	
309 Facility			
NE Legacy Facilities			
S600 ENGINEERING LABORATORIES			
Misc Engineering Laboratories			
S600 Radiological Facilities			
324 Facility	Yes	Yes	60
325 Facility	Yes	Yes	45
326 Facility			
327 Facility	Yes	Yes	12
329 Facility			
306W			
Misc Radiological Facilities			
S600 NON RAD FACILITIES			
331 Facility			
3020 Facility			
HANFORD SITE INFRASTRUCTURE			
UTILITIES			
Steam System			
Water System			
Liquid Sanitary Waste System			
Electrical Distribution System			
Telecommunications System			
Central Sanitary Landfill			
SUPPORT FACILITIES			
Emergency Services			
General Purpose Offices			
General Purpose Shops			
General Purpose Warehouses			
Environmental Support Facilities			
HAMMER			
TRANSPORTATION & LAND			
Rail System			
Land			
Road System			

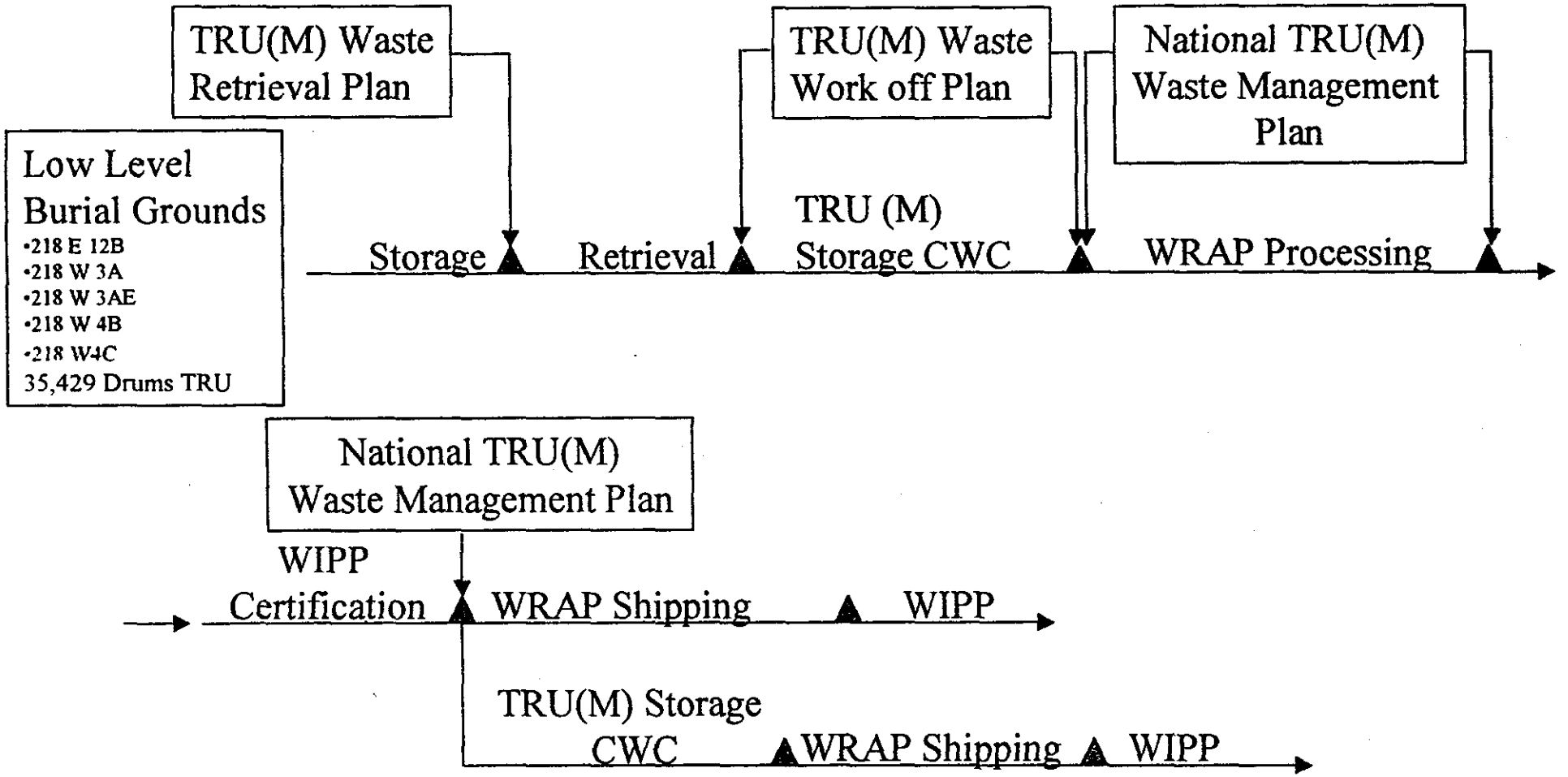
Appendix B:

Waste Stream Process Flow Diagrams

(consisting of 29 pages)

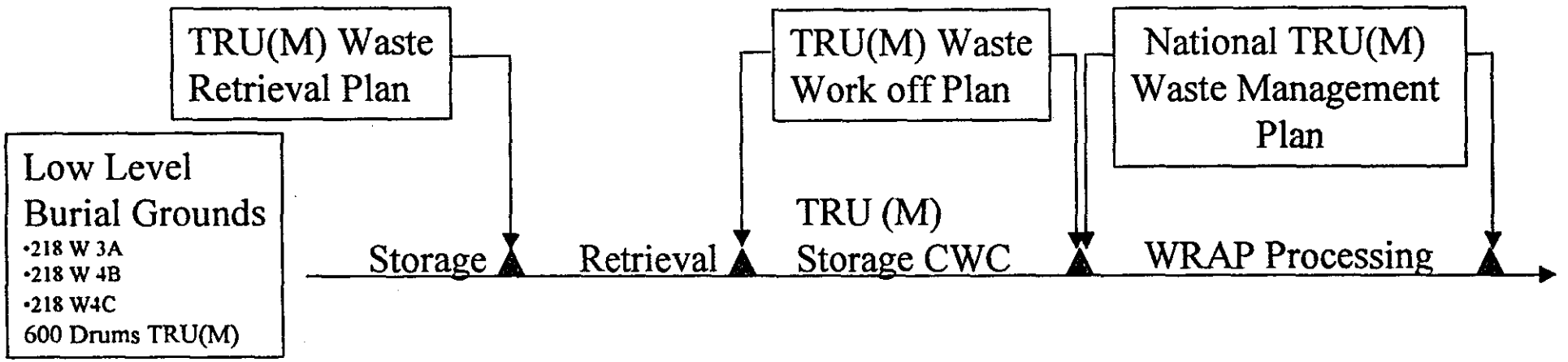
Process Flow
M-91-02 TRU Waste Streams

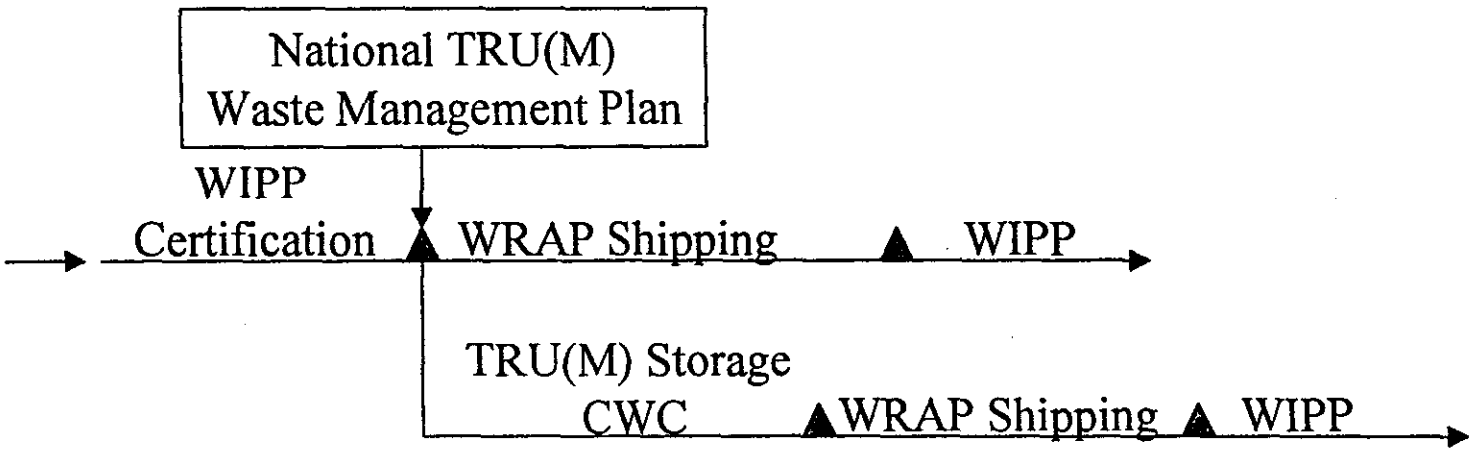
Existing Capability – Contact Handled



Process Flow
M-91-02 TRU (M) Waste Streams

Existing Capability – Contact Handled

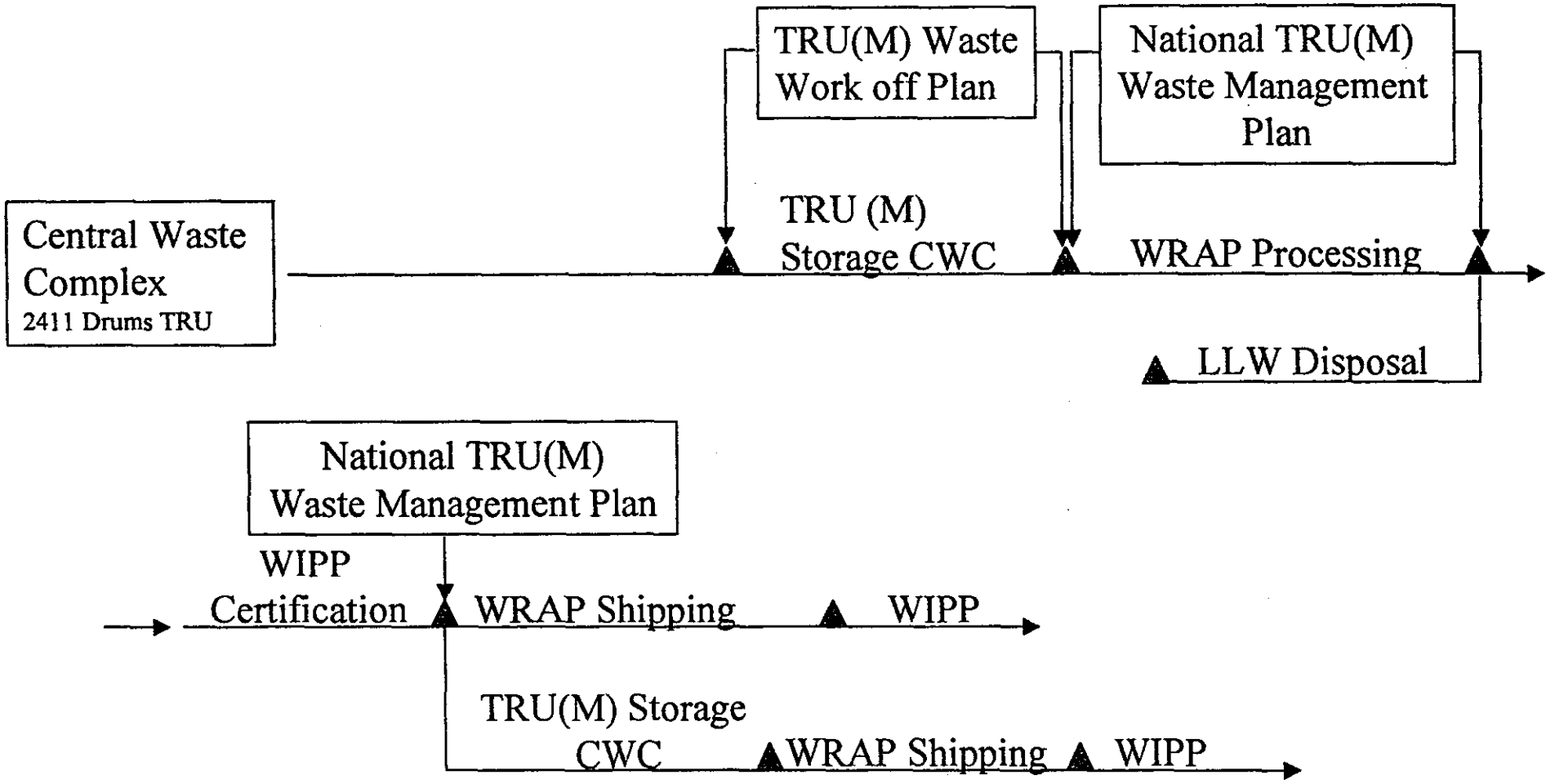




3/8/01

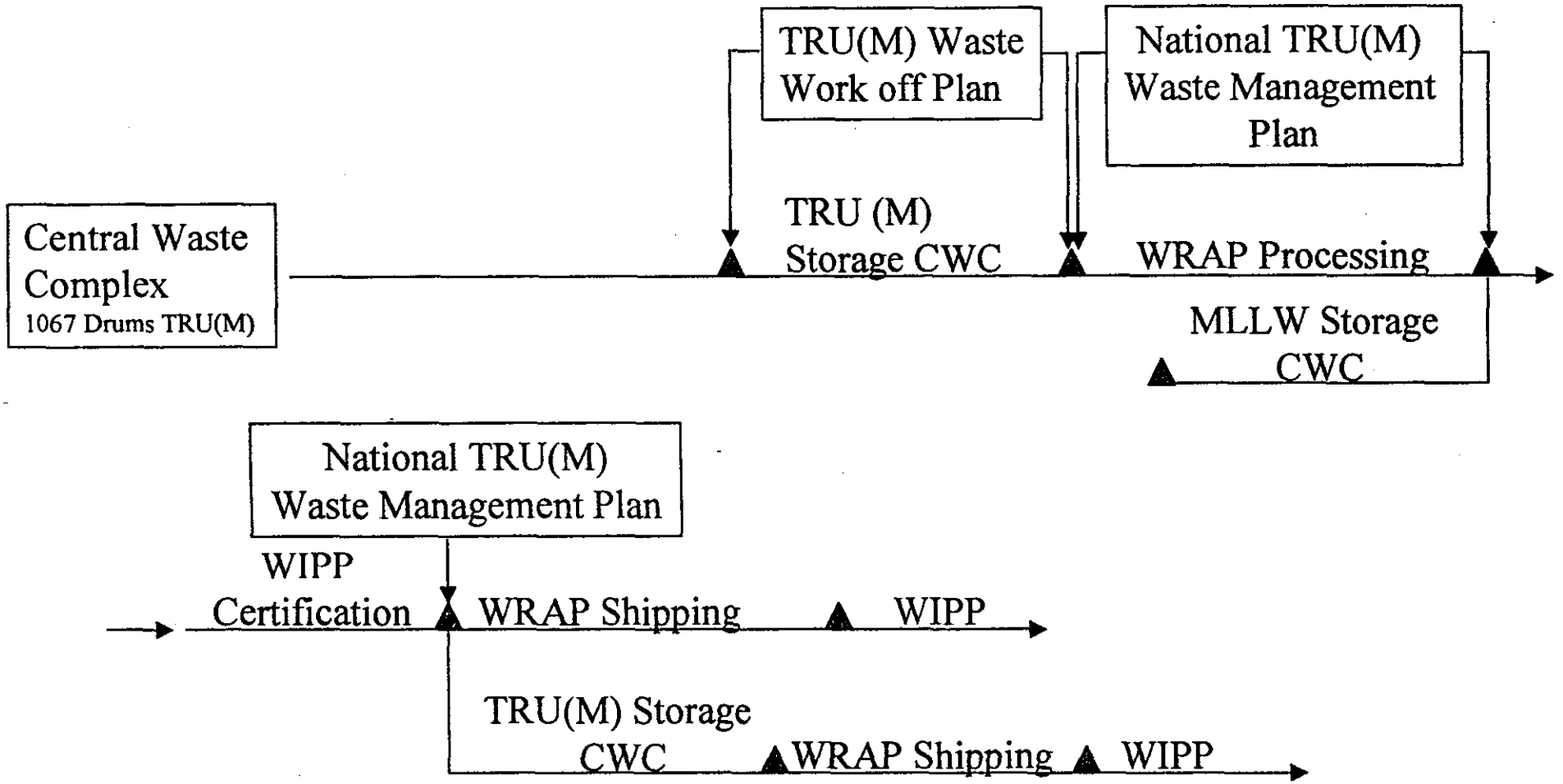
Process Flow
M-91-02 TRU Waste Streams

Existing Capability – Contact Handled



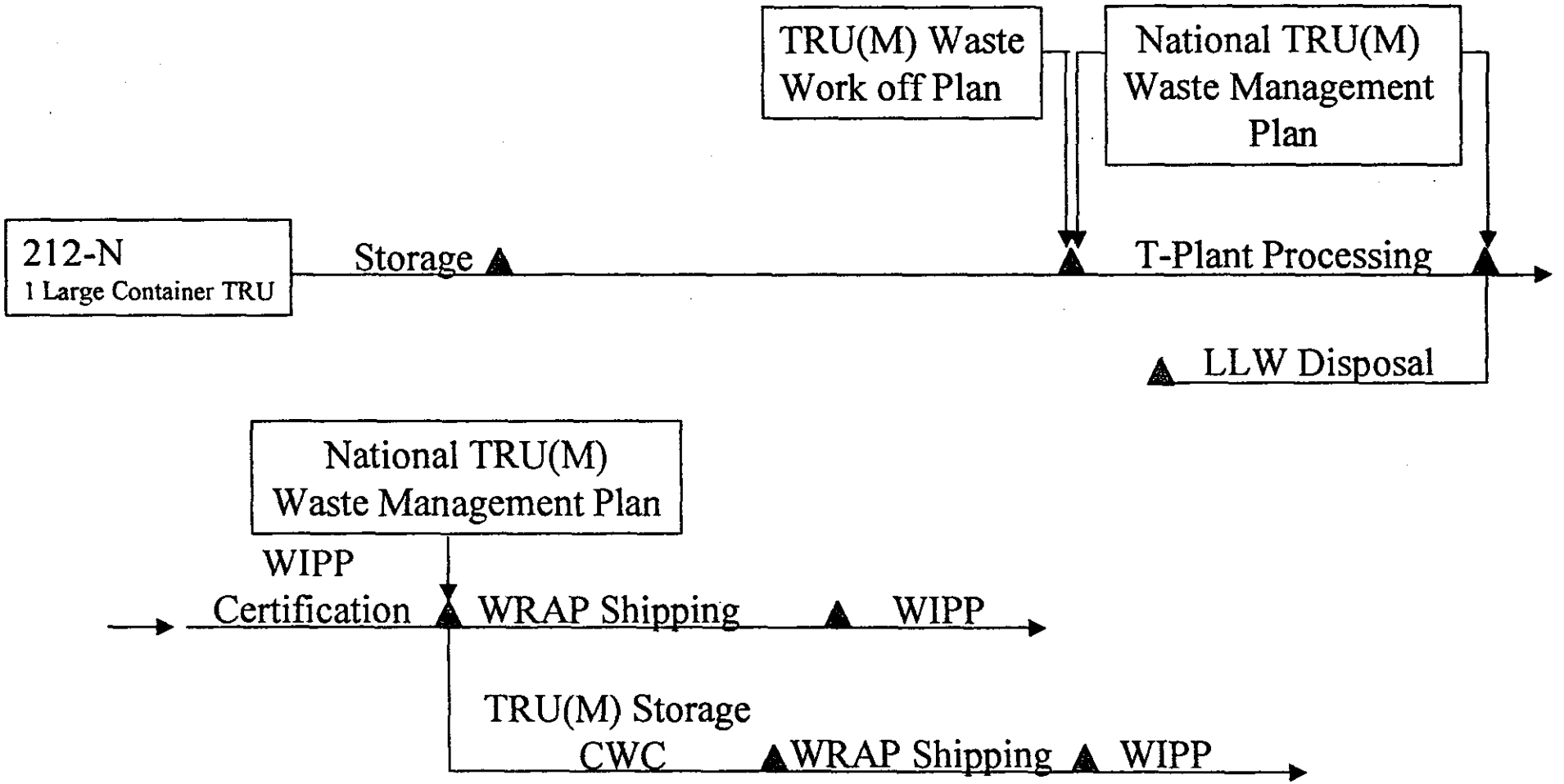
Process Flow
M-91-02 TRU (M) Waste Streams

Existing Capability – Contact Handled



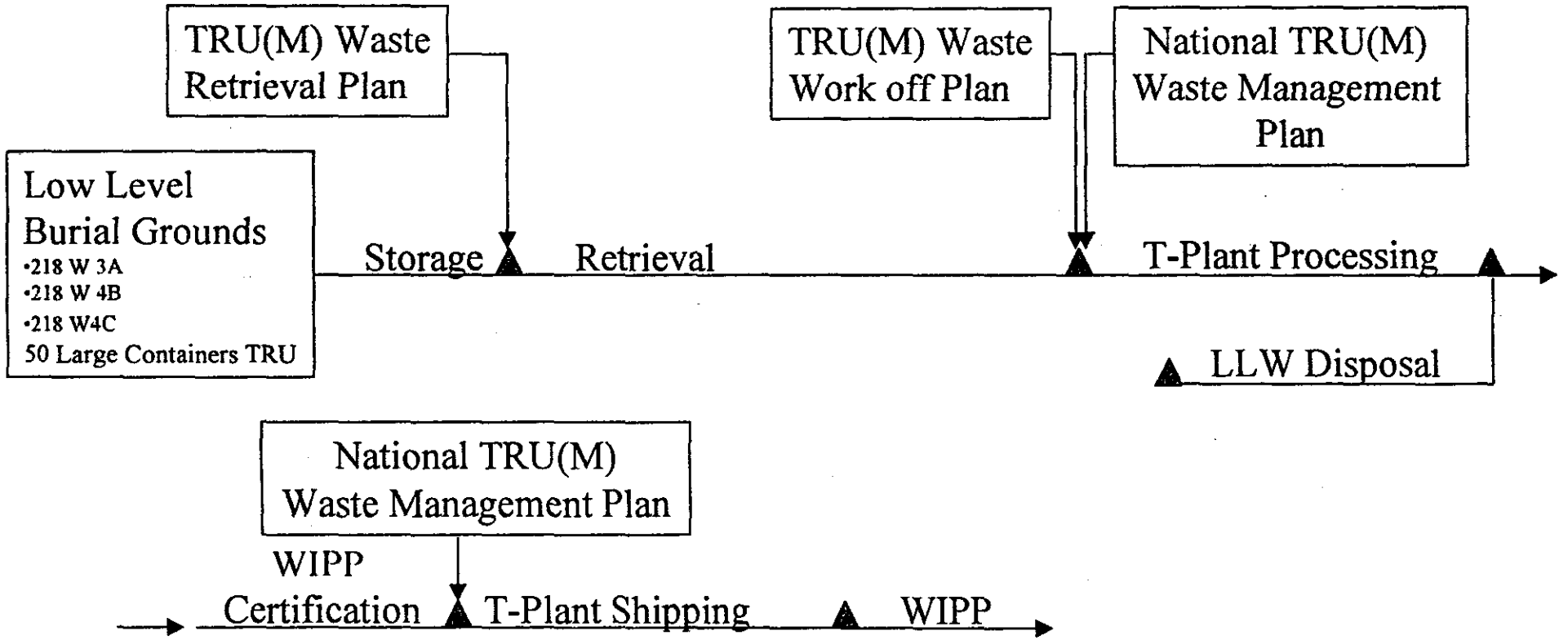
Process Flow
M-91-06-T01; M-91-08-T01 TRU Waste Streams

Planned Capability – Contact Handled



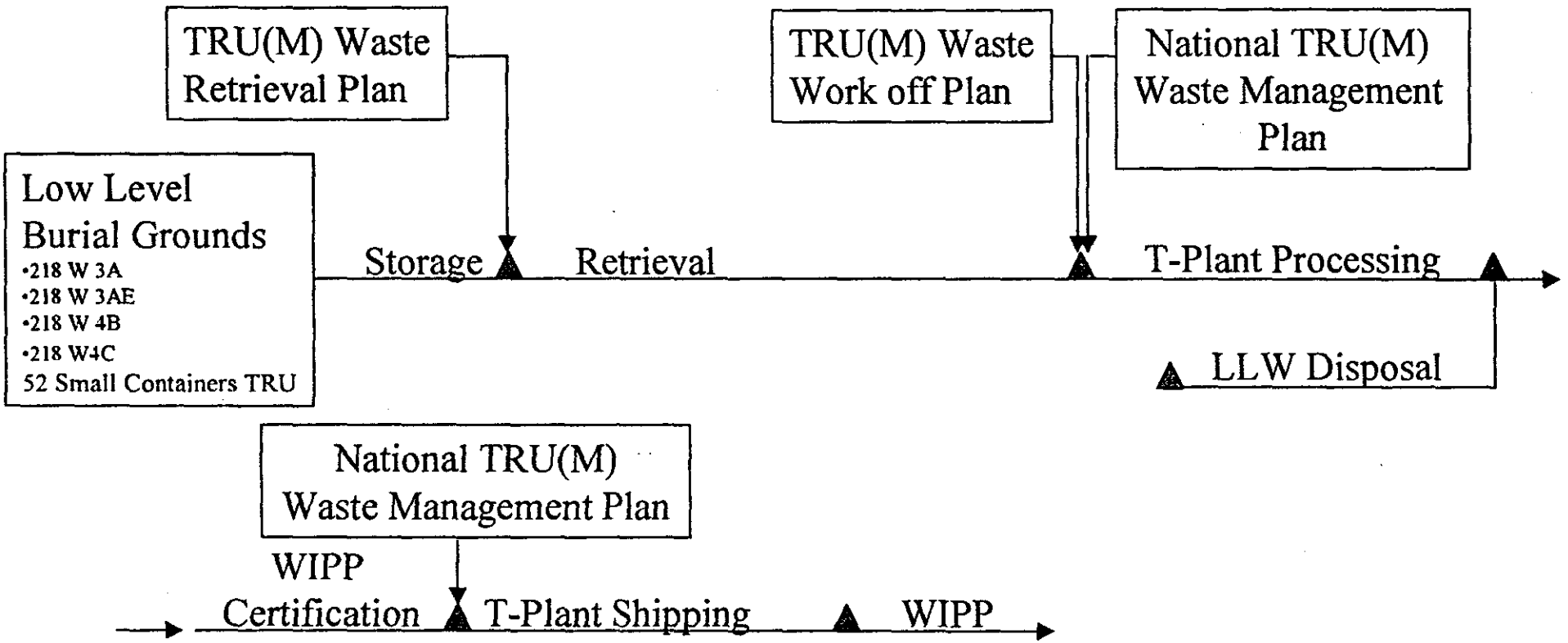
Process Flow
M-91-06-T01; M-91-08-T01 TRU Waste Streams

Planned Capability – Remote Handled



Process Flow
M-91-06-T01; M-91-08-T01 TRU Waste Streams

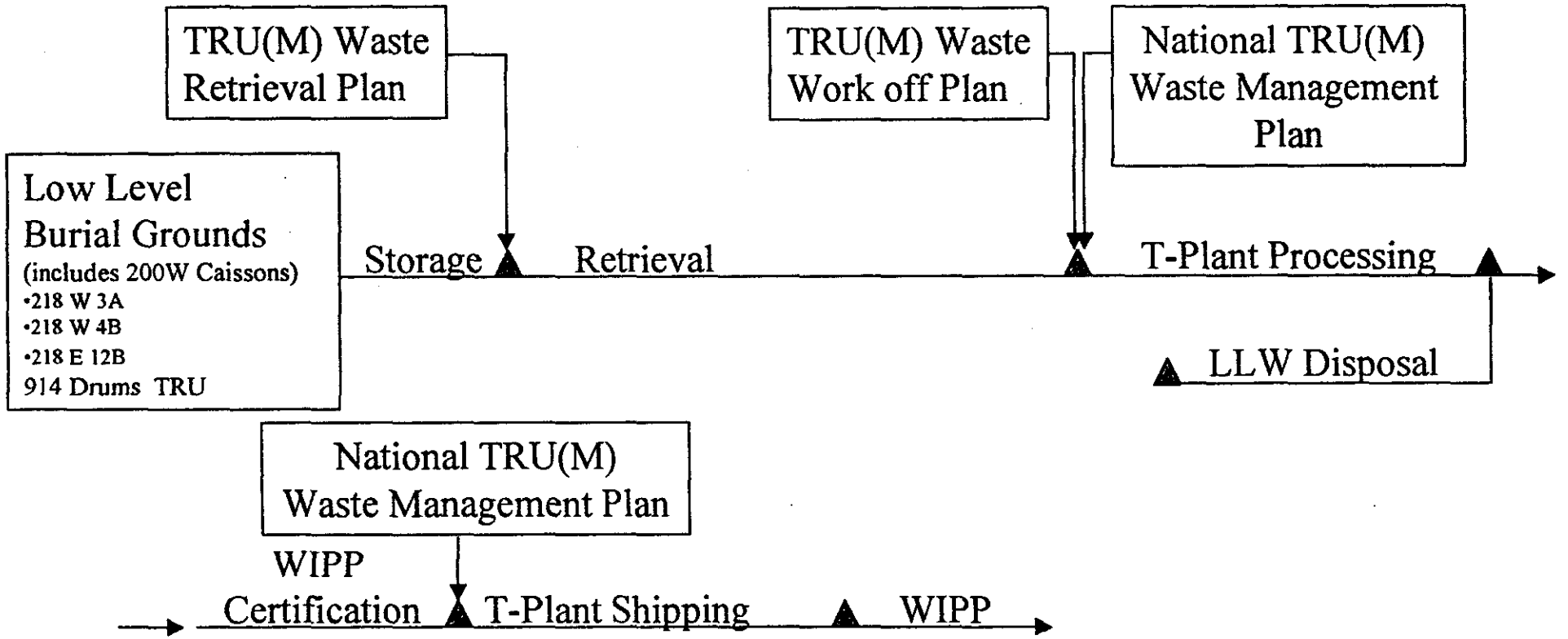
Planned Capability – Remote Handled



3/8/01

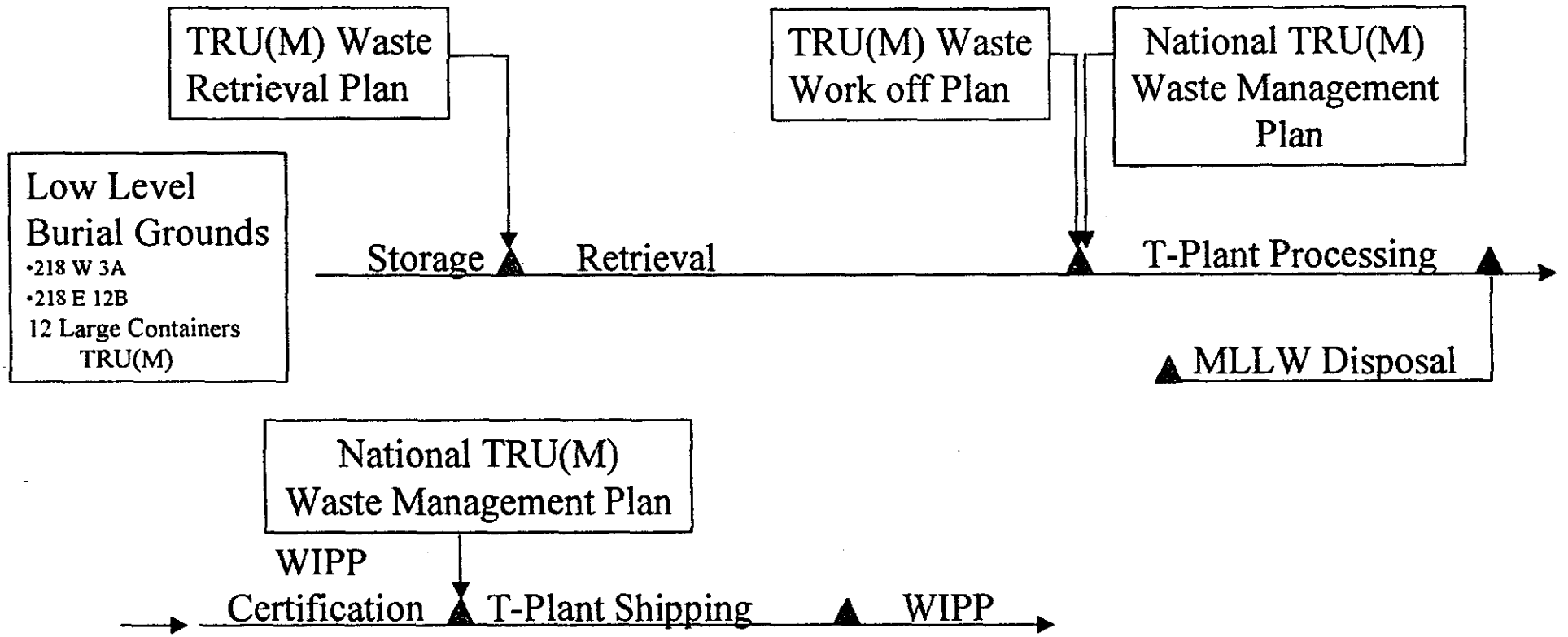
Process Flow
M-91-06-T01; M-91-08-T01 TRU Waste Streams

Planned Capability – Remote Handled



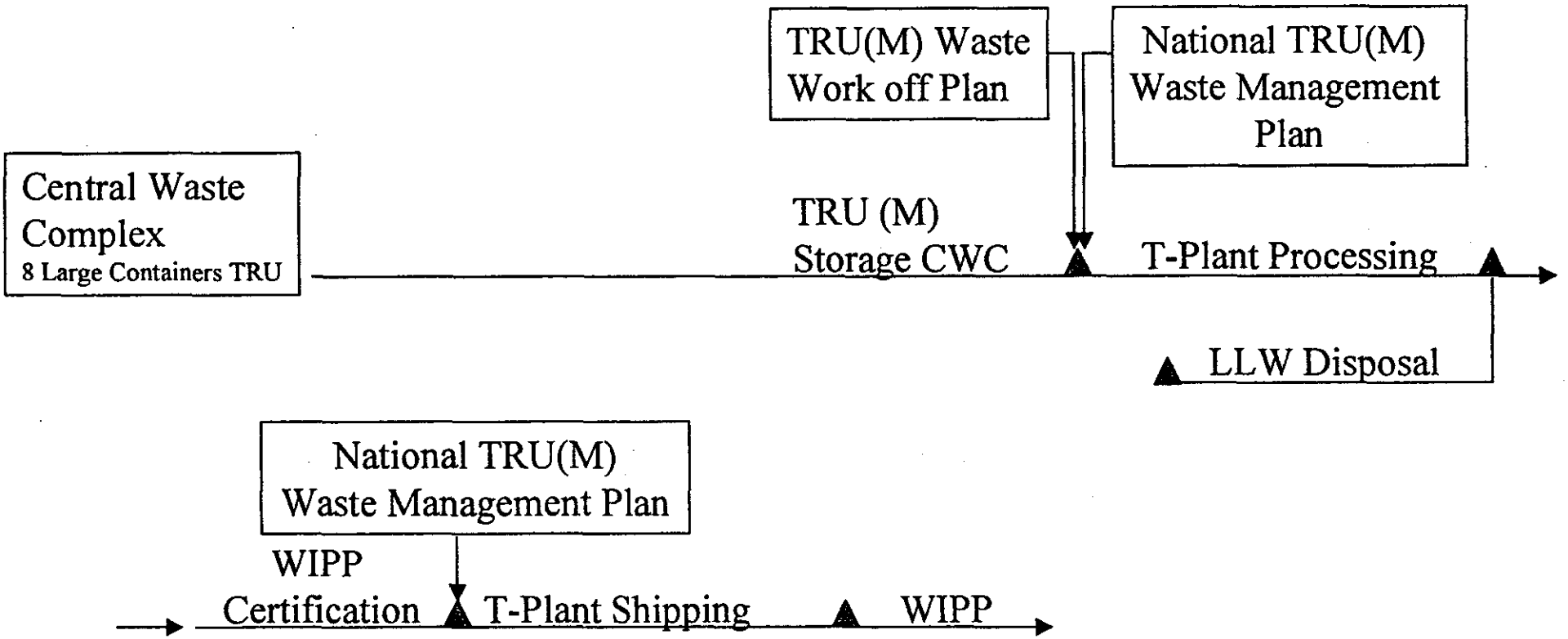
Process Flow
M-91-06-T01; M-91-08-T01 TRU (M) Waste Streams

Planned Capability – Remote Handled



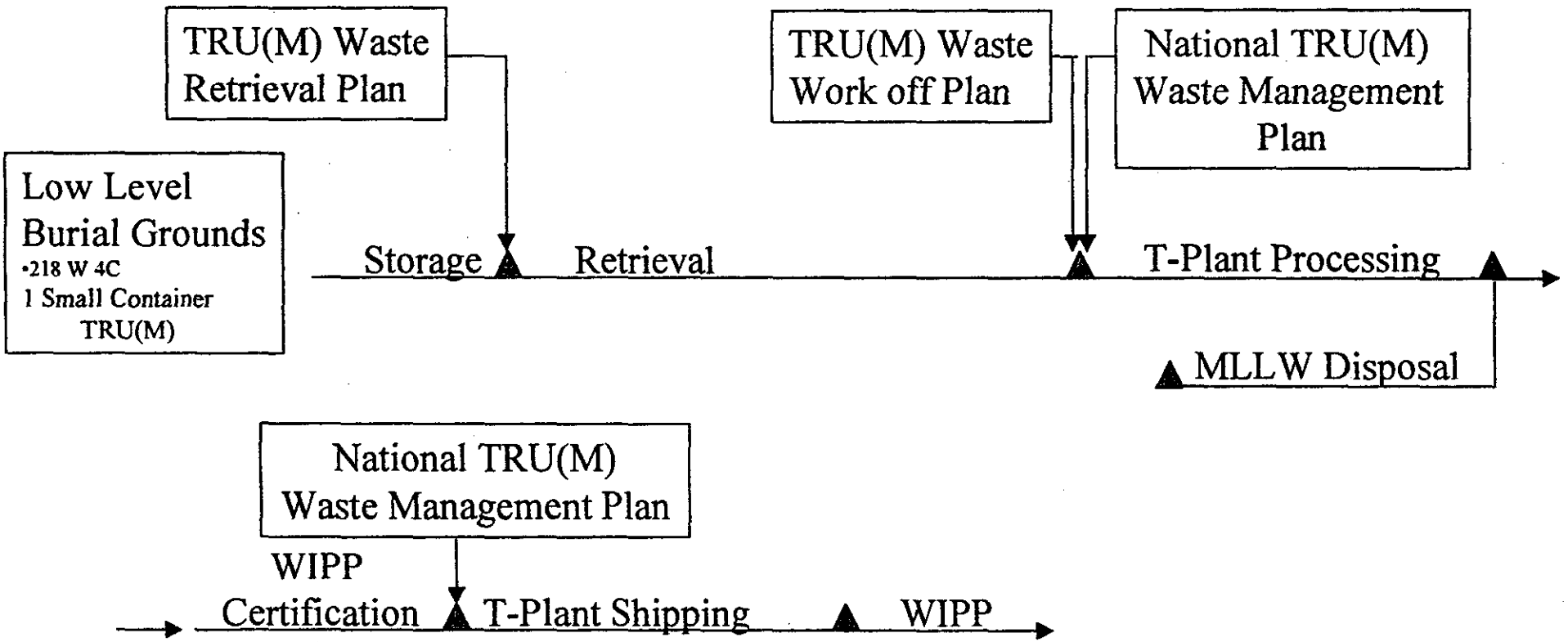
Process Flow
M-91-06-T01; M-91-08-T01 TRU Waste Streams

Planned Capability – Remote Handled



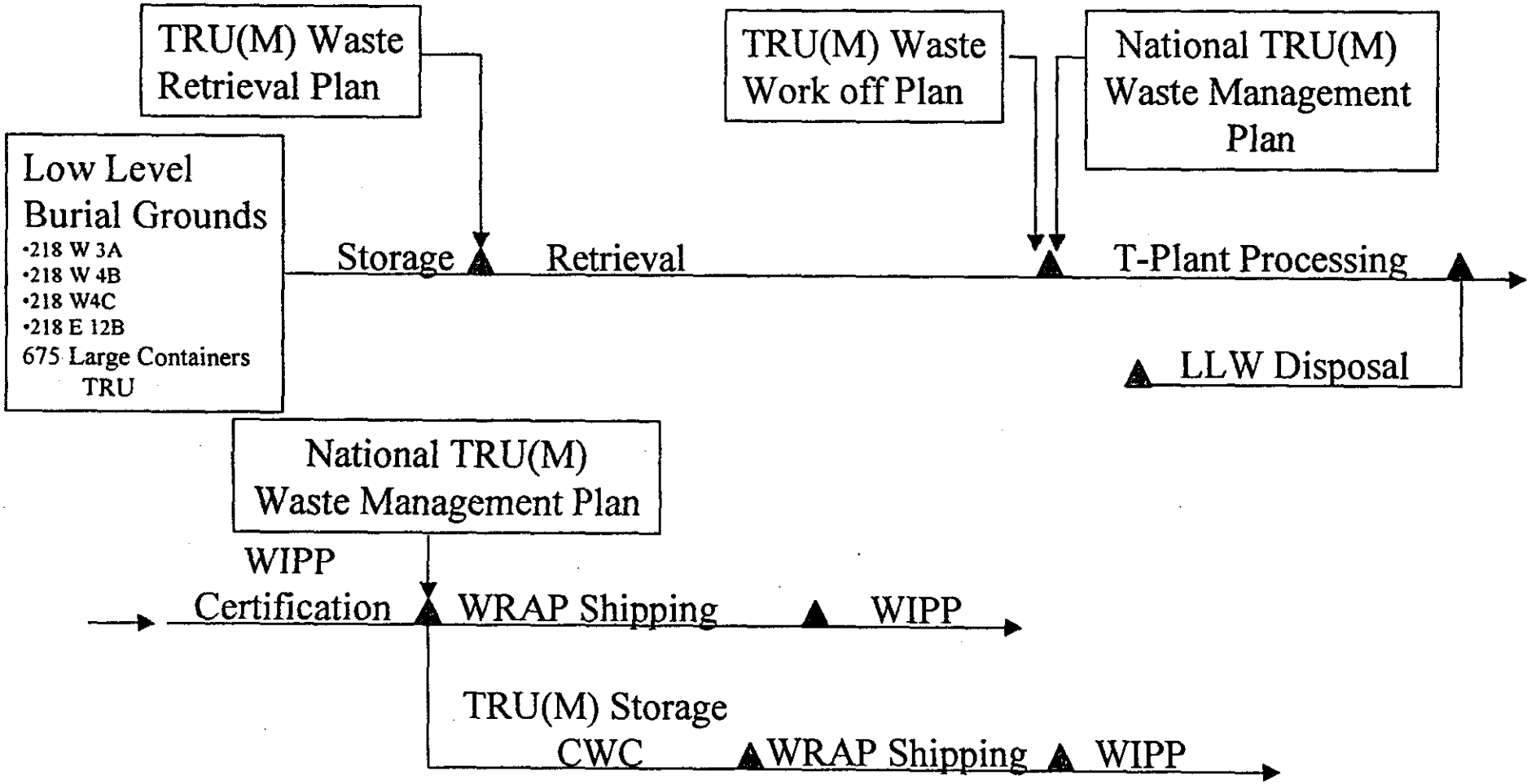
Process Flow
M-91-06-T01; M-91-08-T01 TRU (M) Waste Streams

Planned Capability – Remote Handled



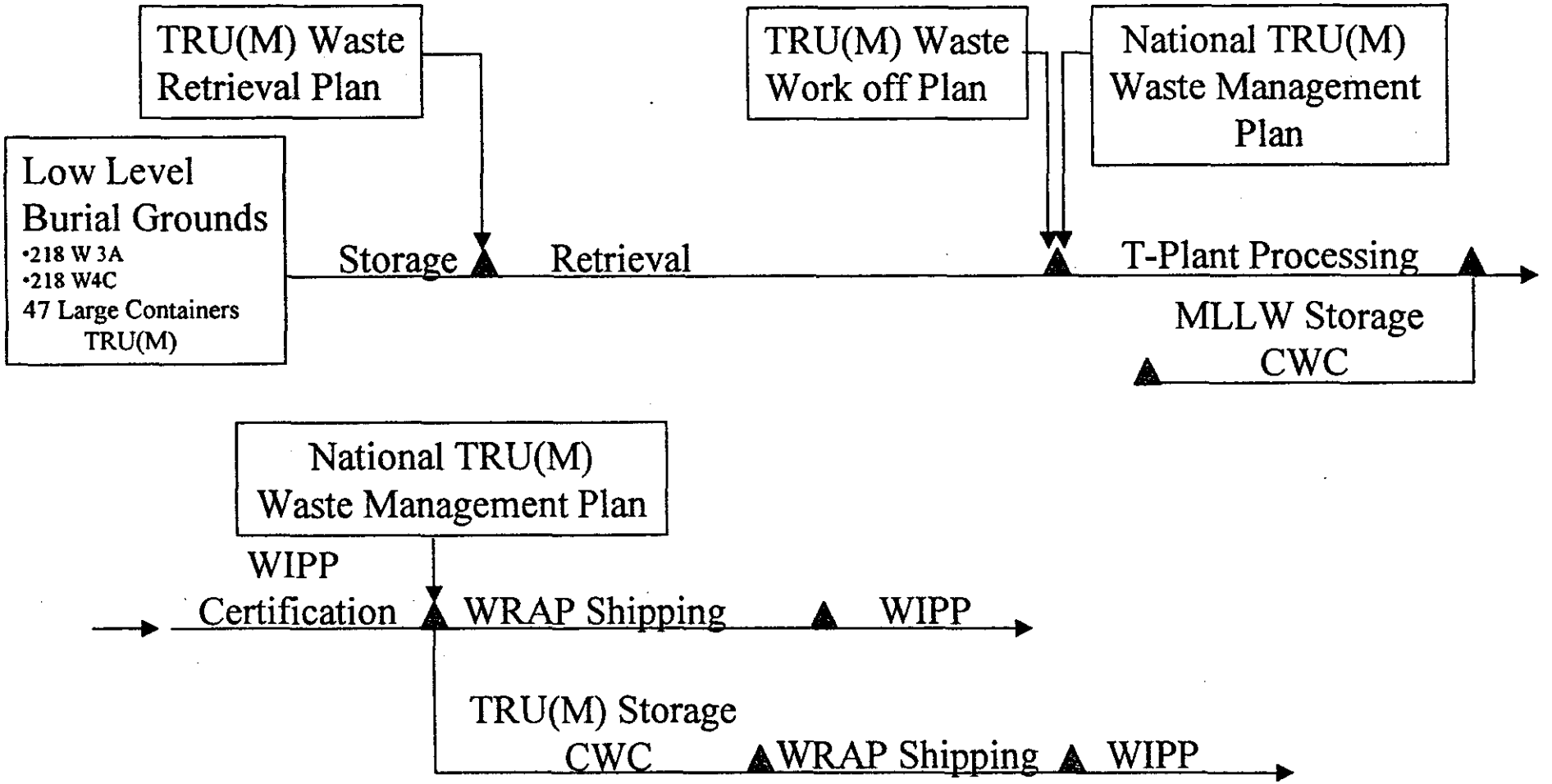
Process Flow
M-91-06-T01; M-91-08-T01 TRU Waste Streams

Planned Capability – Contact Handled



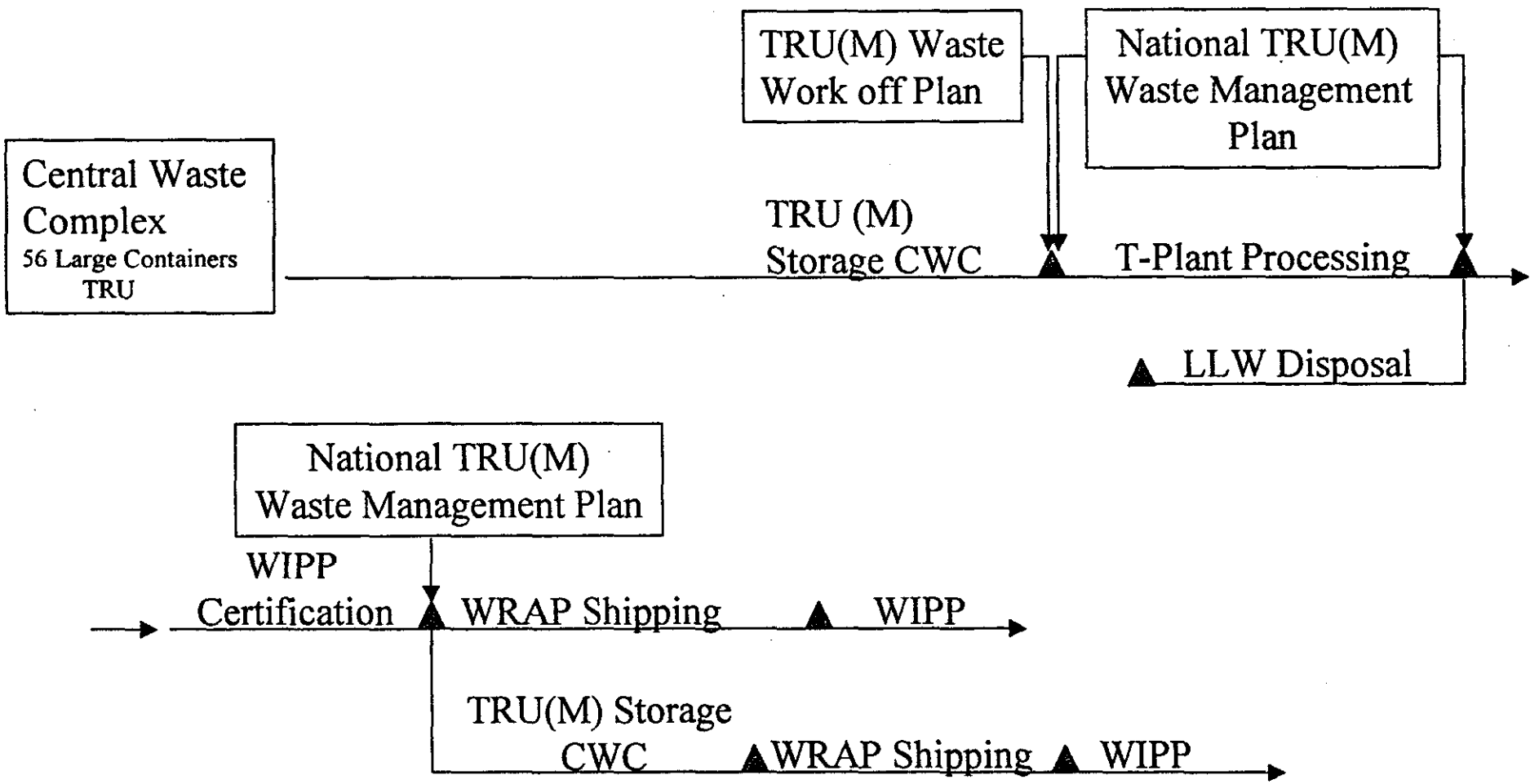
Process Flow
M-91-06-T01; M-91-08-T01 TRU (M) Waste Streams

Planned Capability – Contact Handled



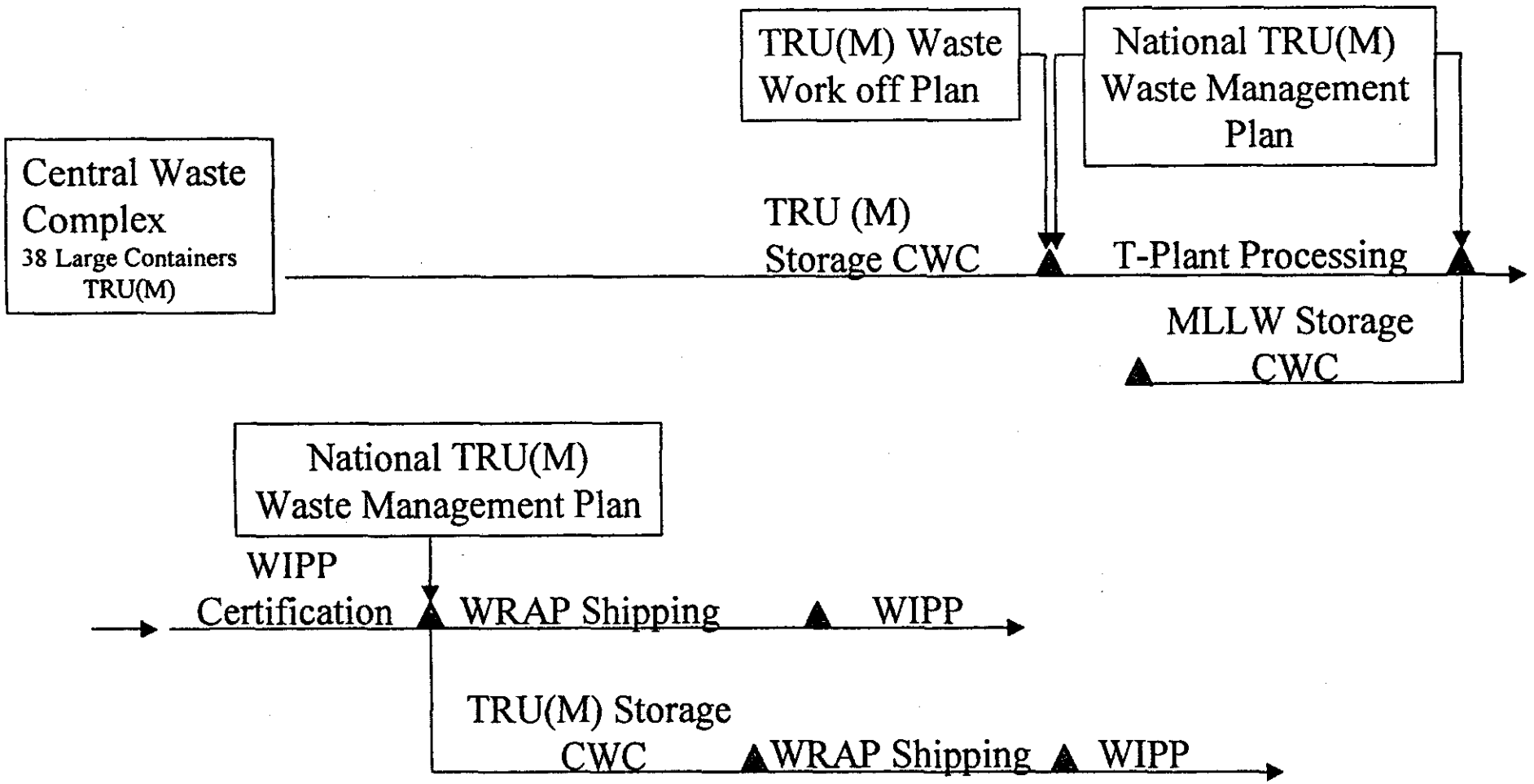
Process Flow
M-91-06-T01; M-91-08-T01 TRU Waste Streams

Planned Capability – Contact Handled



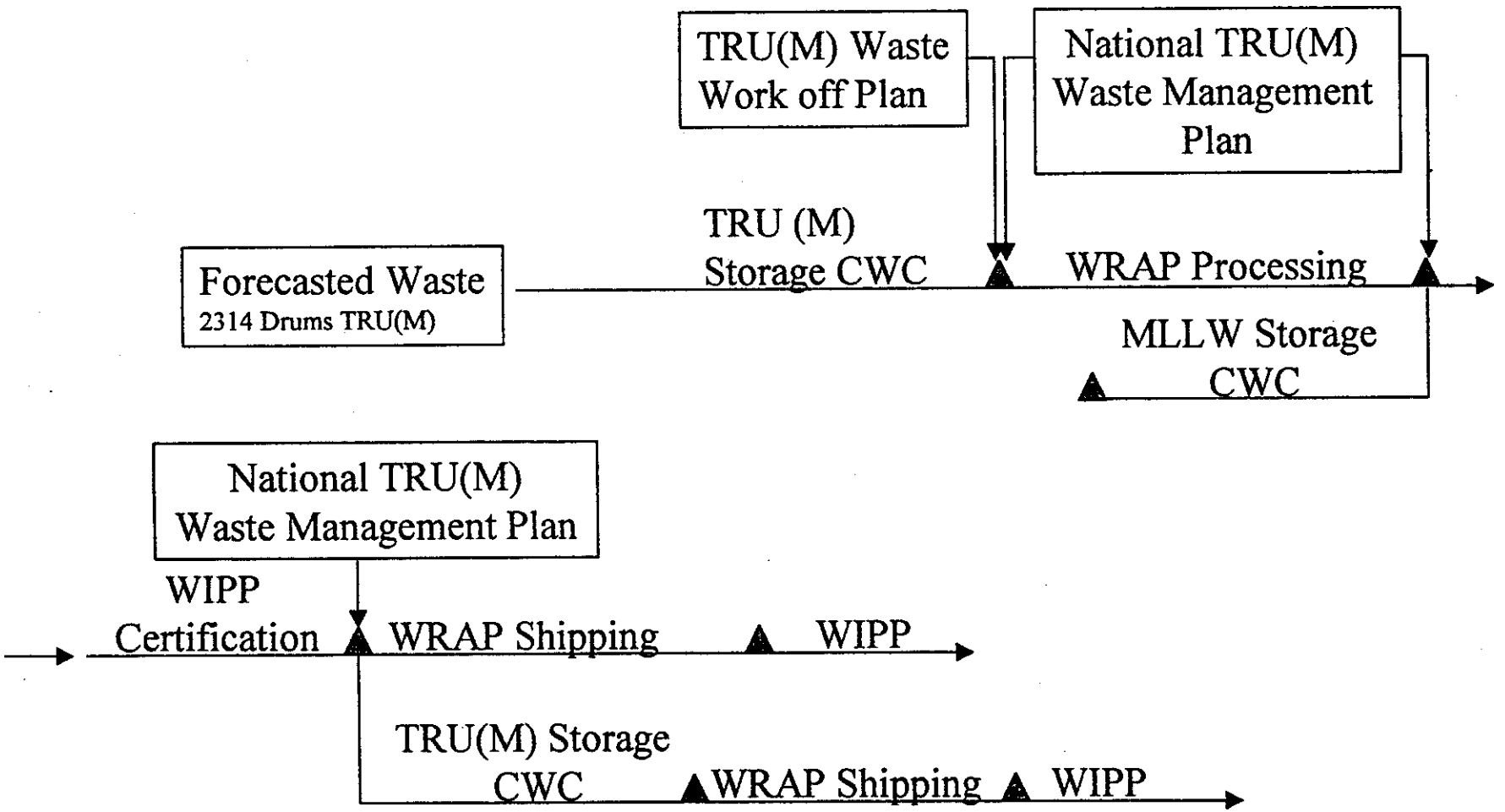
Process Flow
M-91-06-T01; M-91-08-T01 TRU (M) Waste Streams

Planned Capability – Contact Handled



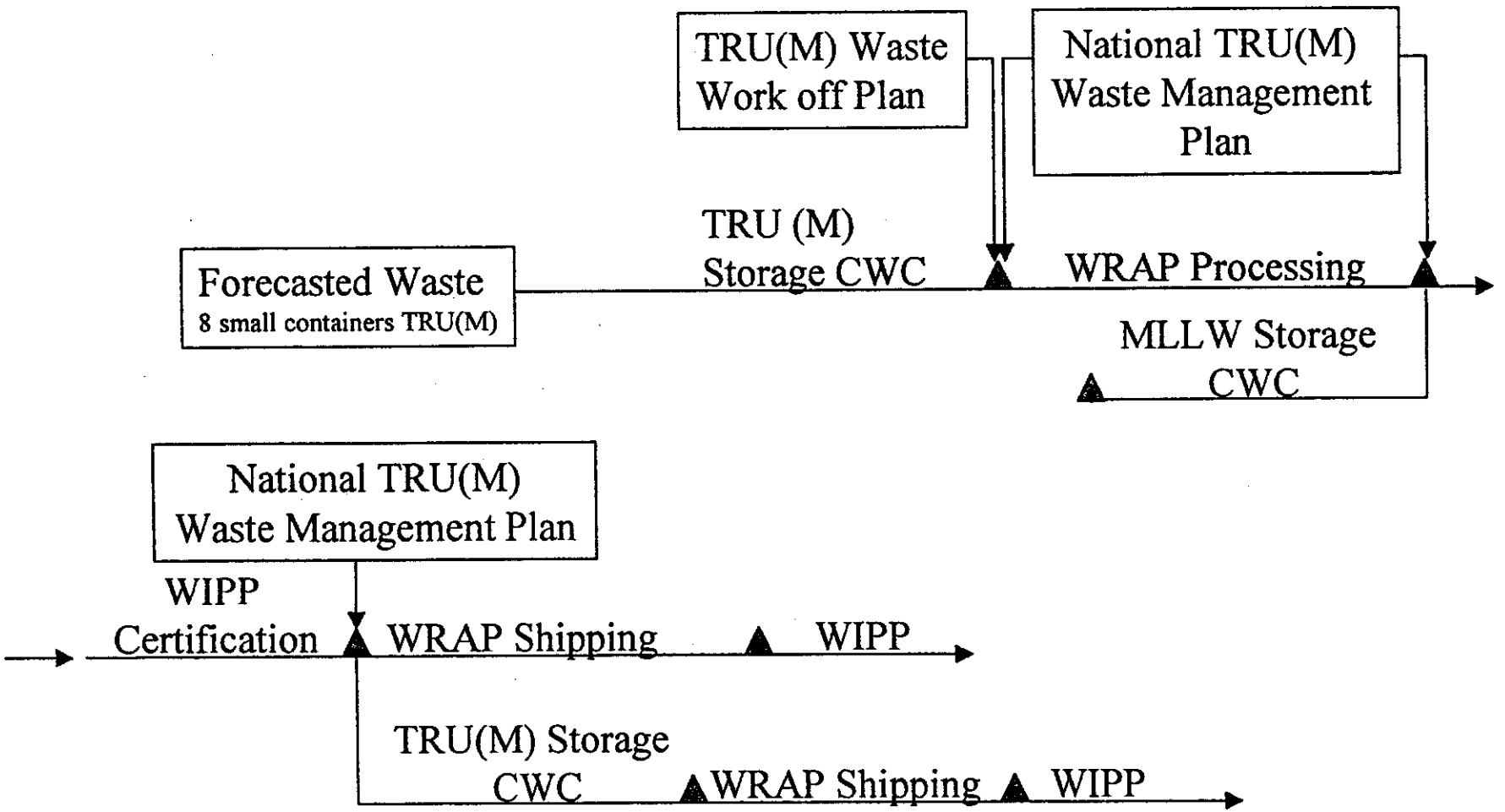
Process Flow
M-91-02 TRU (M) Waste Streams

Existing Capability – Contact Handled



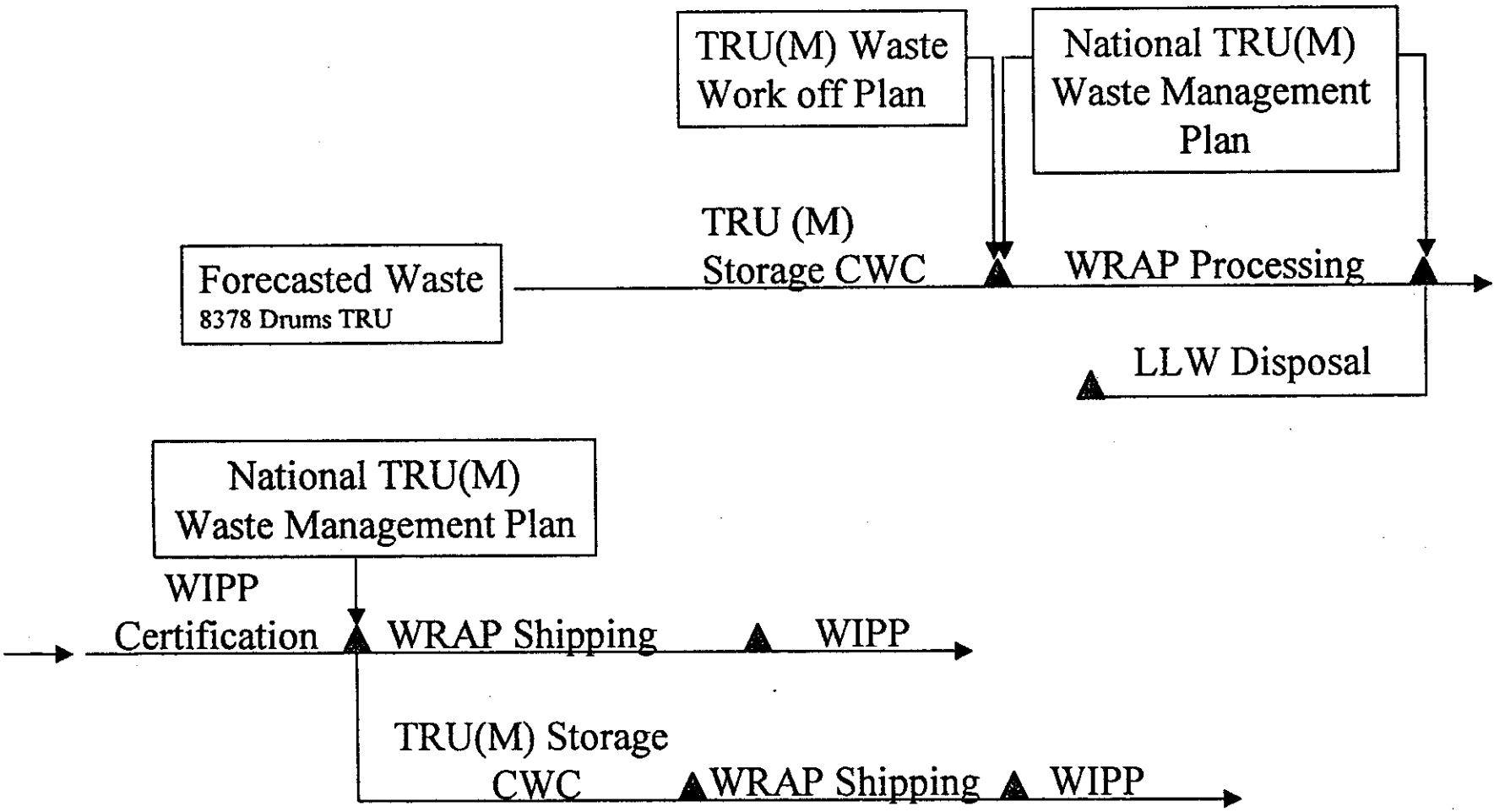
Process Flow
M-91-02 TRU (M) Waste Streams

Existing Capability – Contact Handled



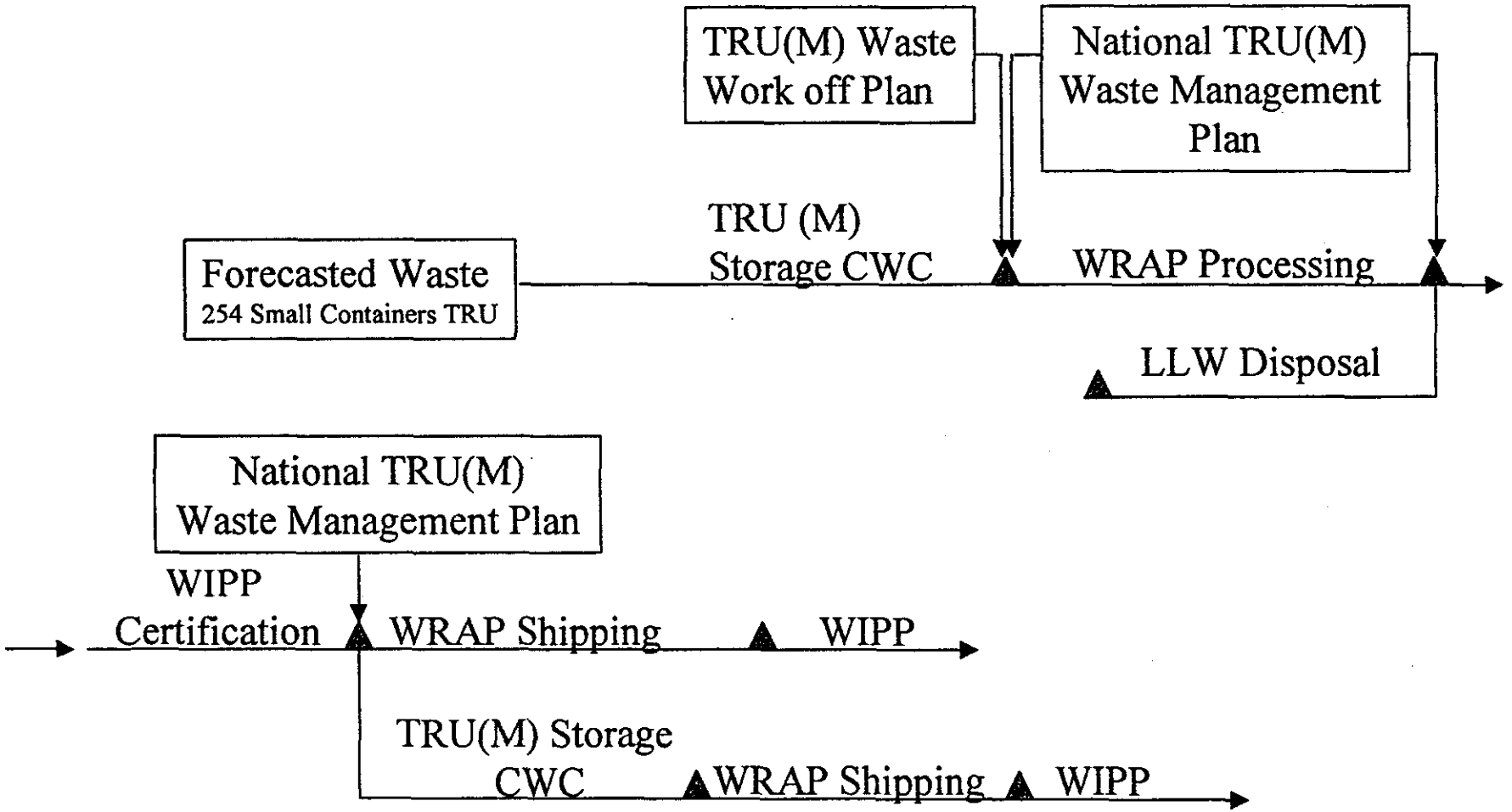
Process Flow
M-91-02 TRU Waste Streams

Existing Capability – Contact Handled



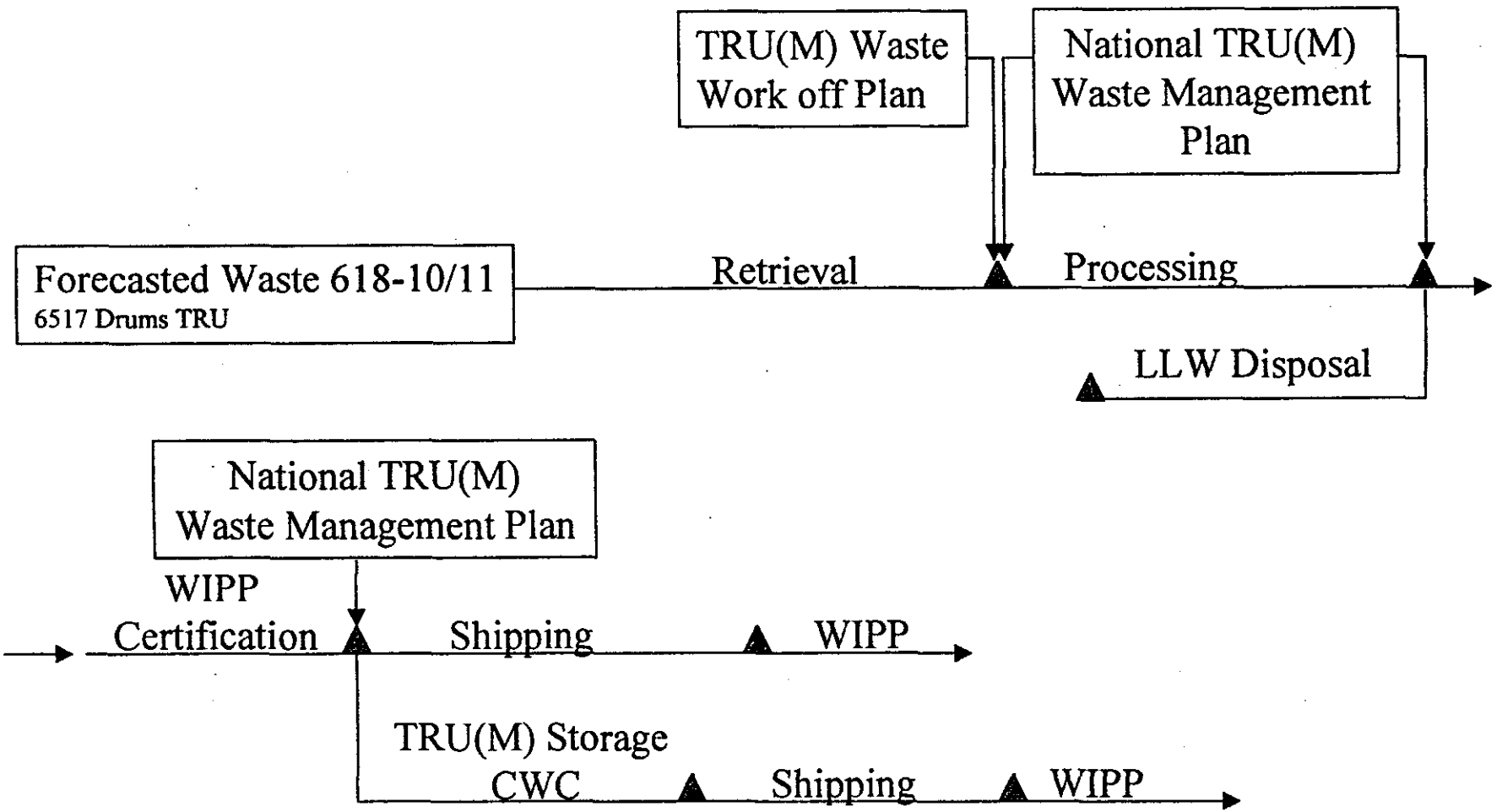
Process Flow
M-91-02 TRU Waste Streams

Existing Capability – Contact Handled



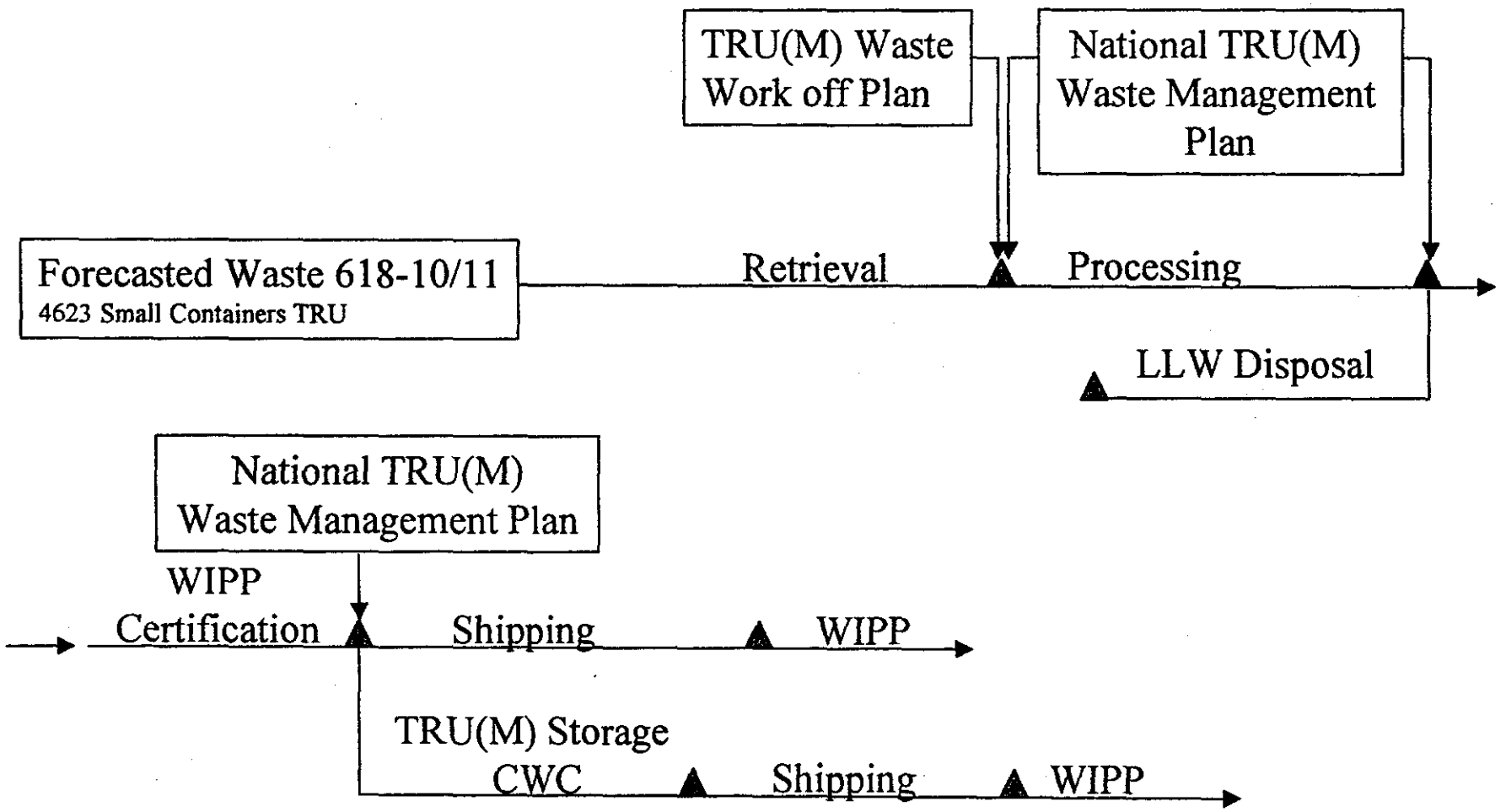
Process Flow
M-91-02 TRU Waste Streams

Existing Capability – Contact Handled



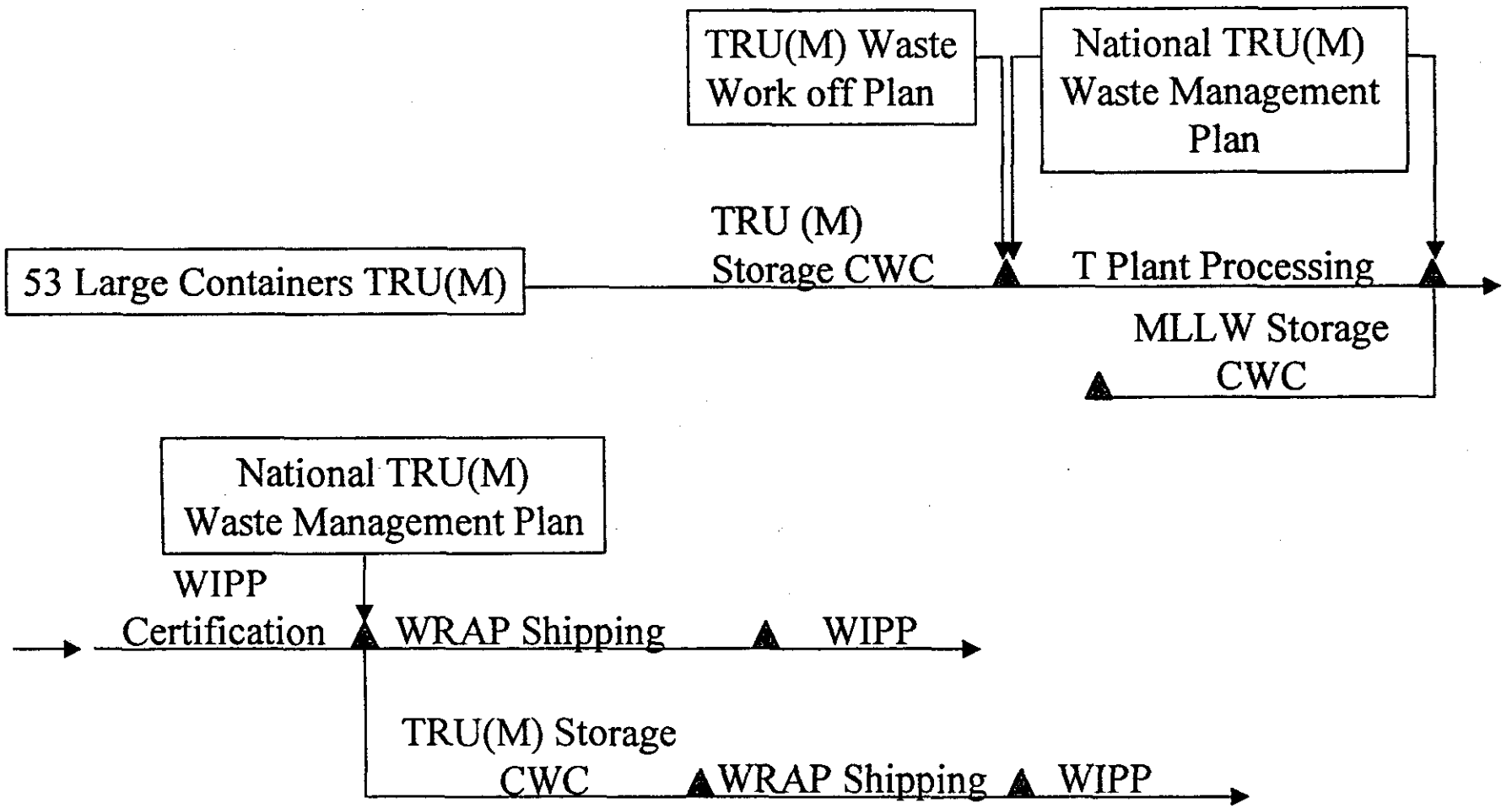
Process Flow
M-91-02 TRU Waste Streams

Existing Capability – Contact Handled



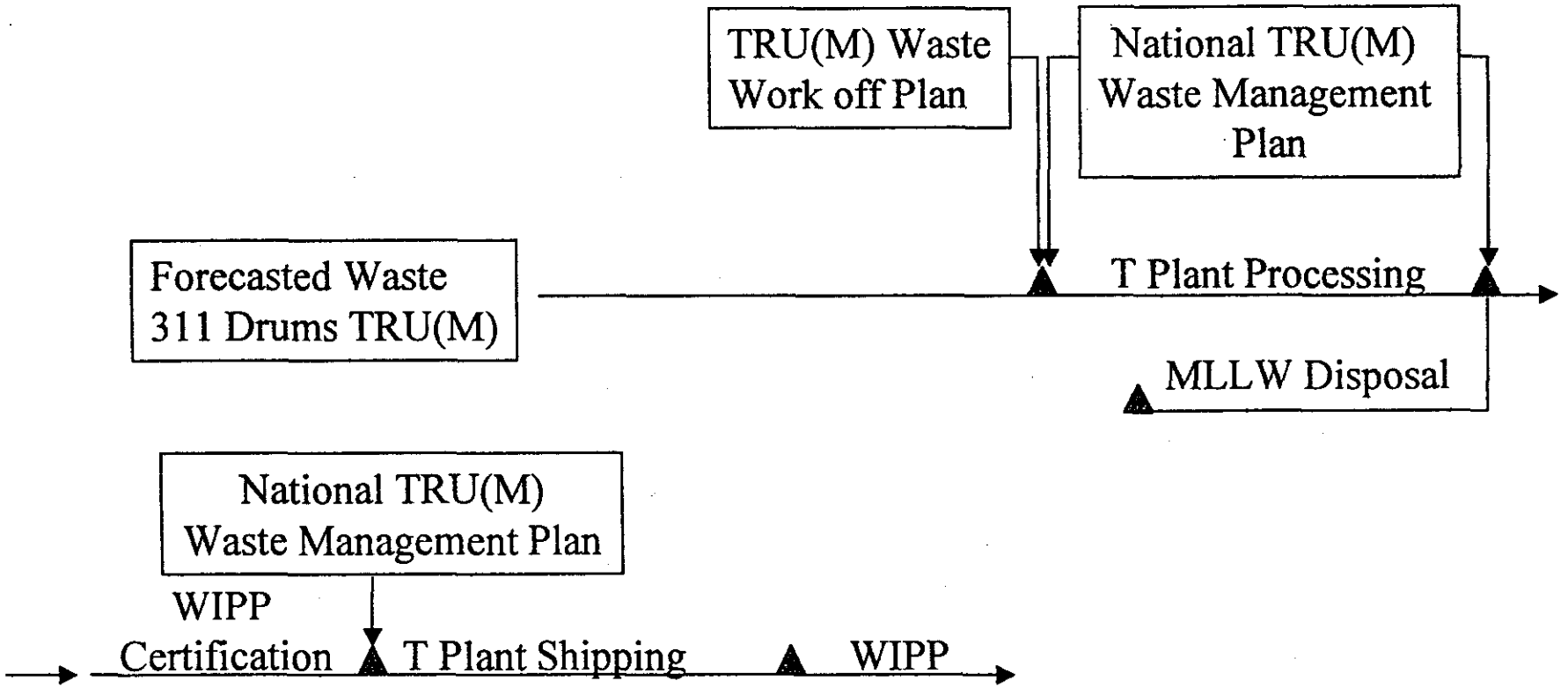
Process Flow
M-91-06-T01; M-91-08-T01 TRU (M) Waste Streams

Planned Capability – Contact Handled



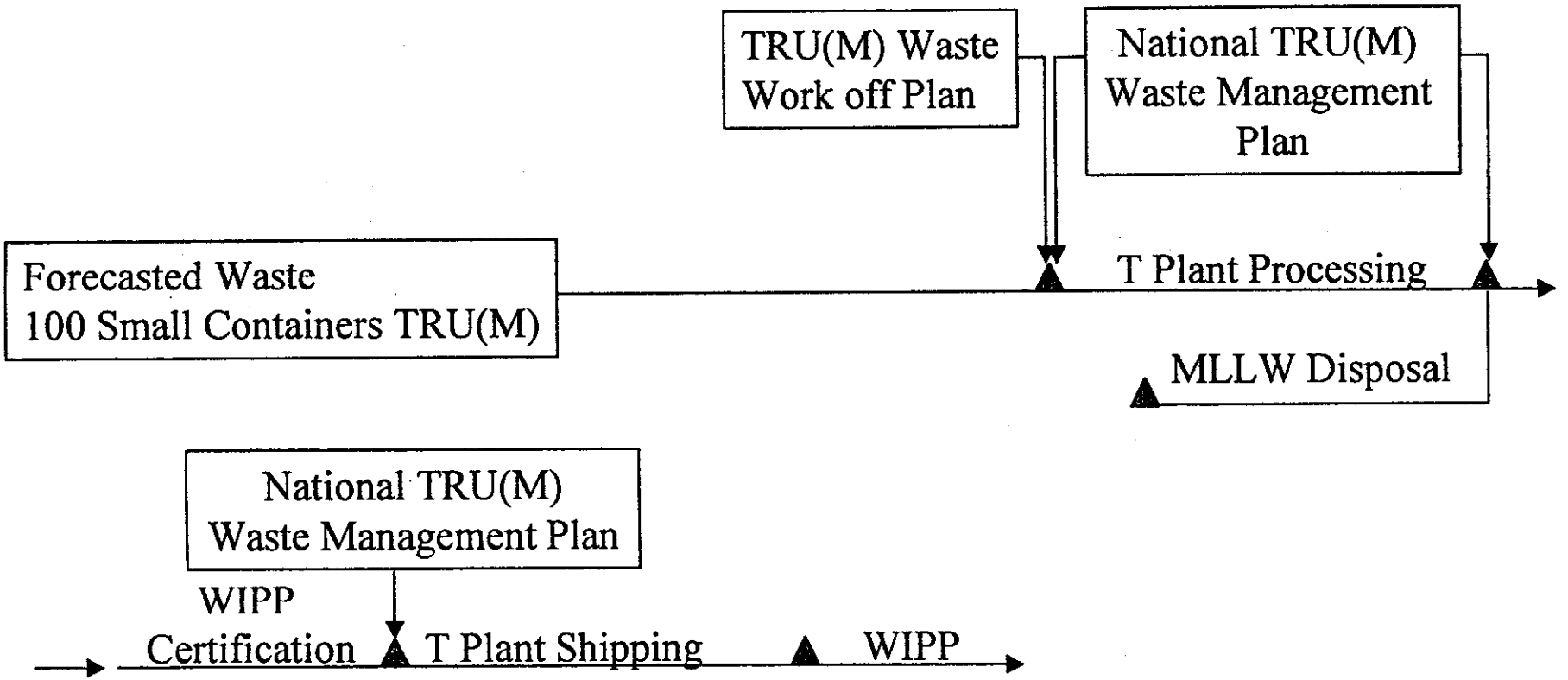
Process Flow
M-91-06-T01; M-91-08-T01 TRU (M) Waste Streams

Planned Capability – Remote Handled



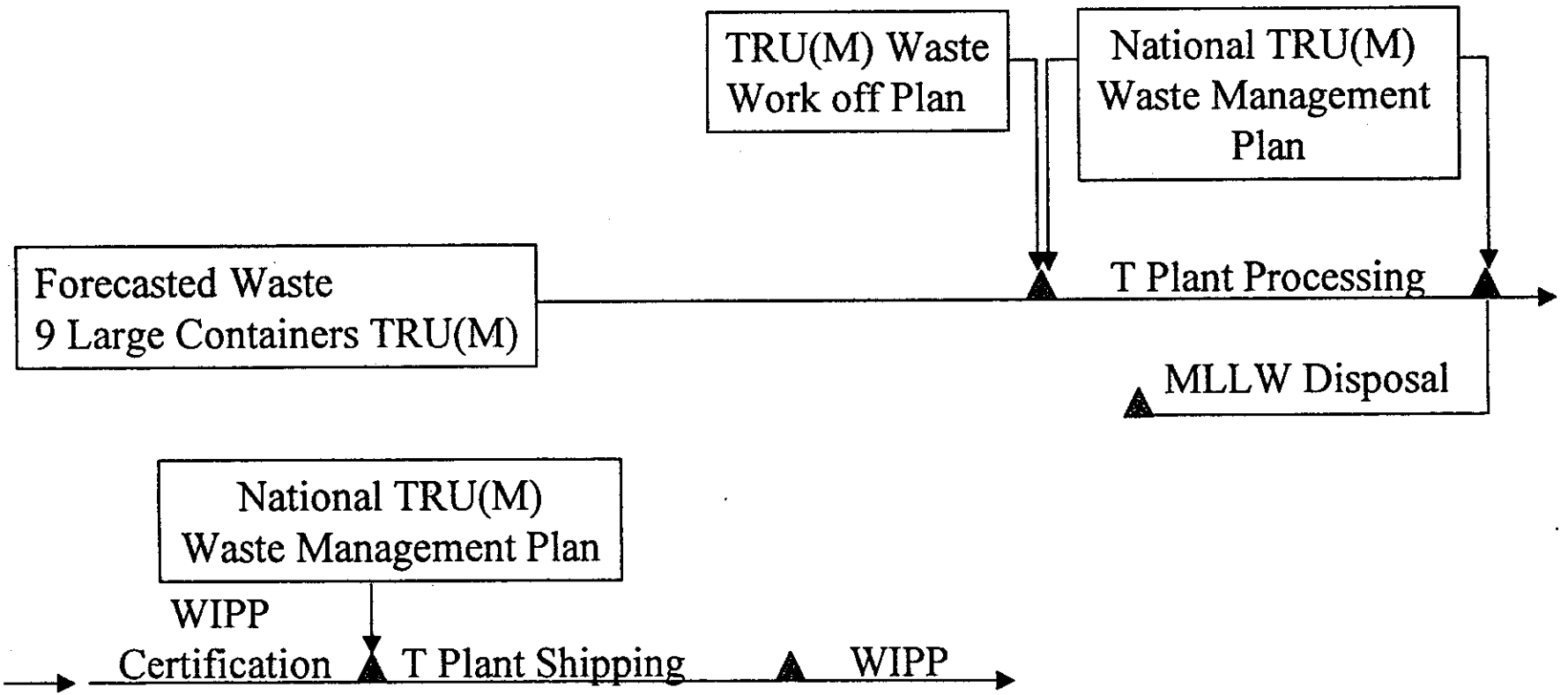
Process Flow
M-91-06-T01; M-91-08-T01 TRU (M) Waste Streams

Planned Capability – Remote Handled



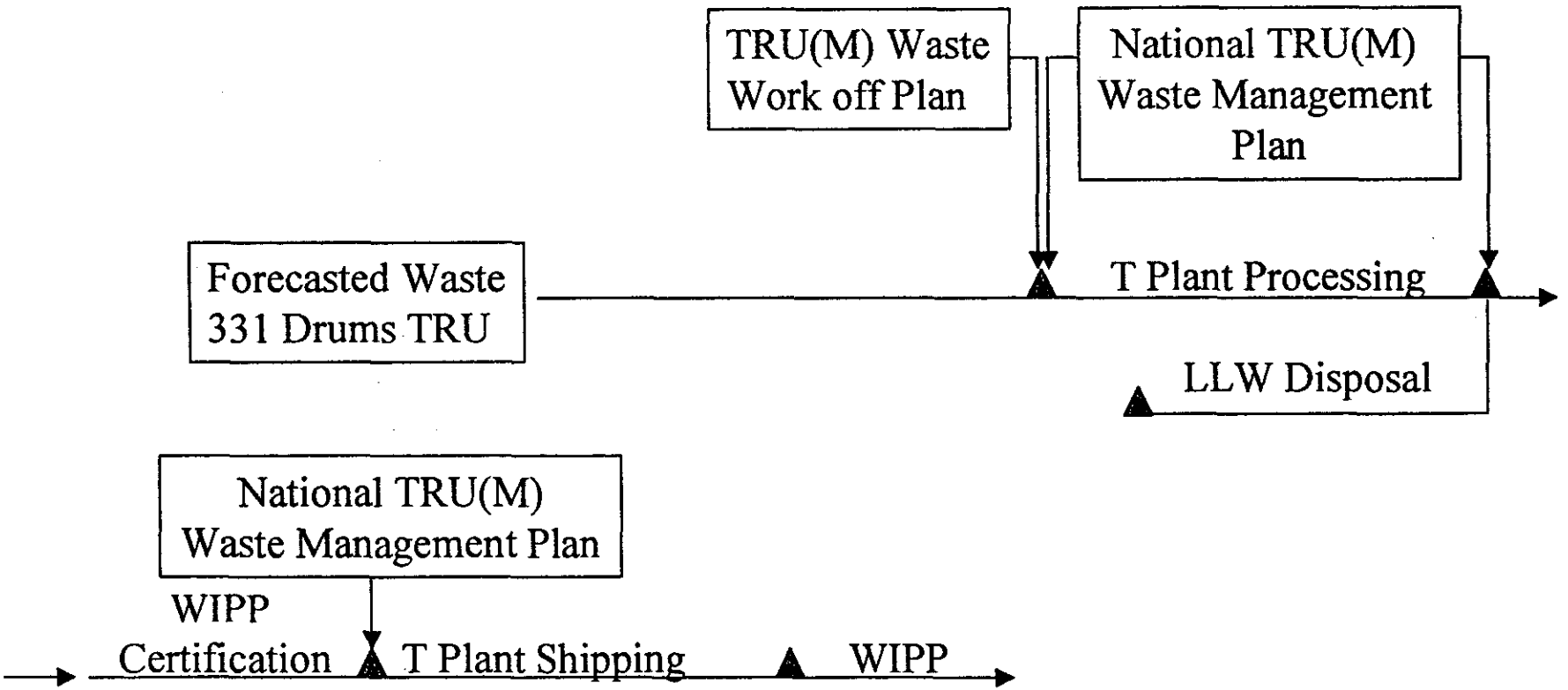
Process Flow
M-91-06-T01; M-91-08-T01 TRU (M) Waste Streams

Planned Capability – Remote Handled



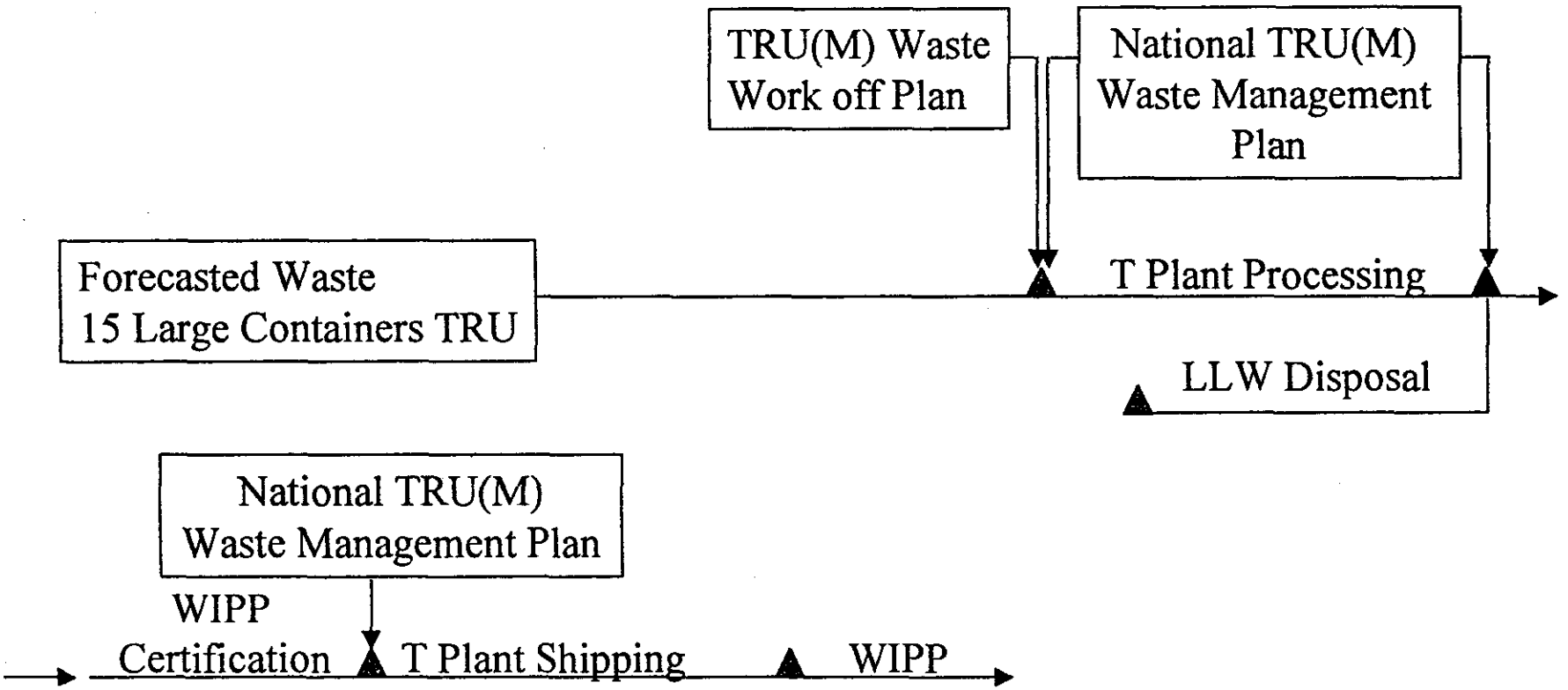
Process Flow
M-91-06-T01; M-91-08-T01 TRU Waste Streams

Planned Capability – Remote Handled



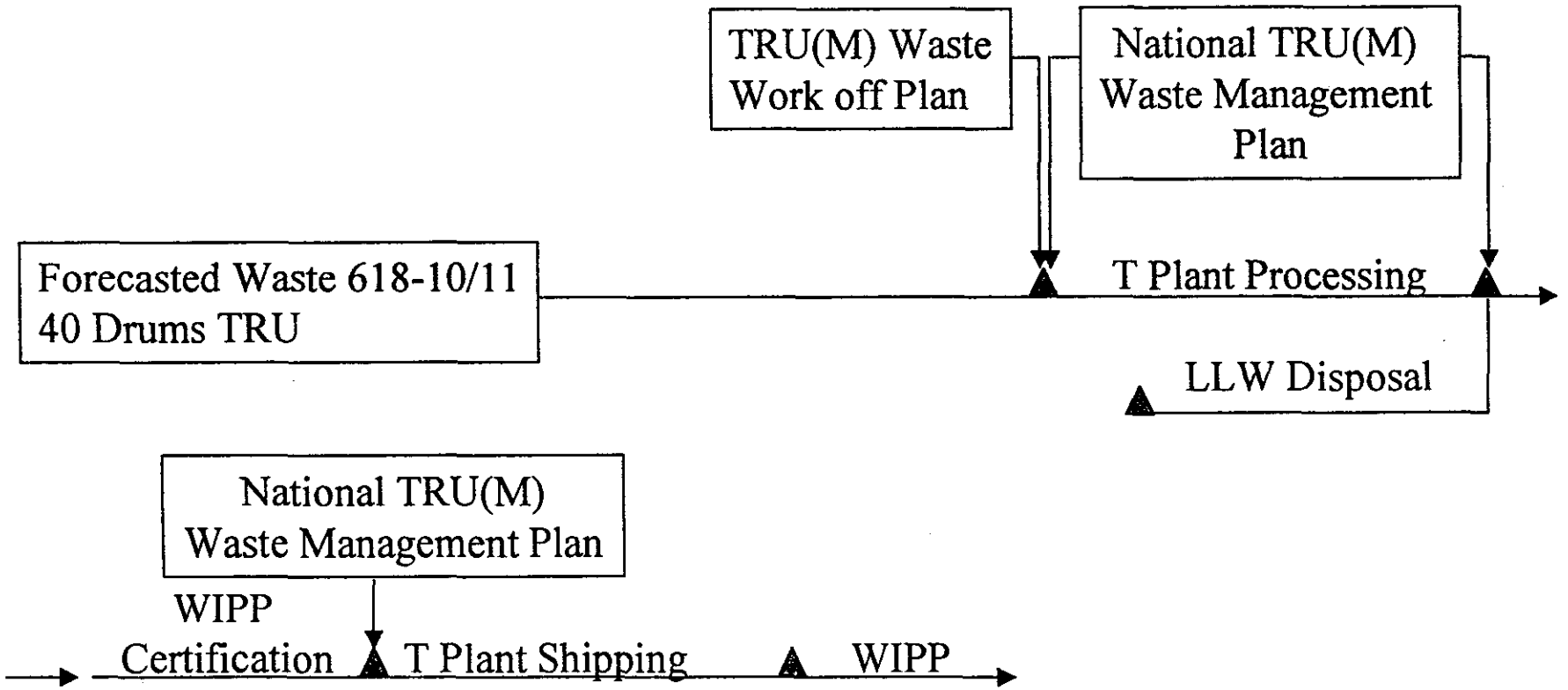
Process Flow
M-91-06-T01; M-91-08-T01 TRU Waste Streams

Planned Capability – Remote Handled



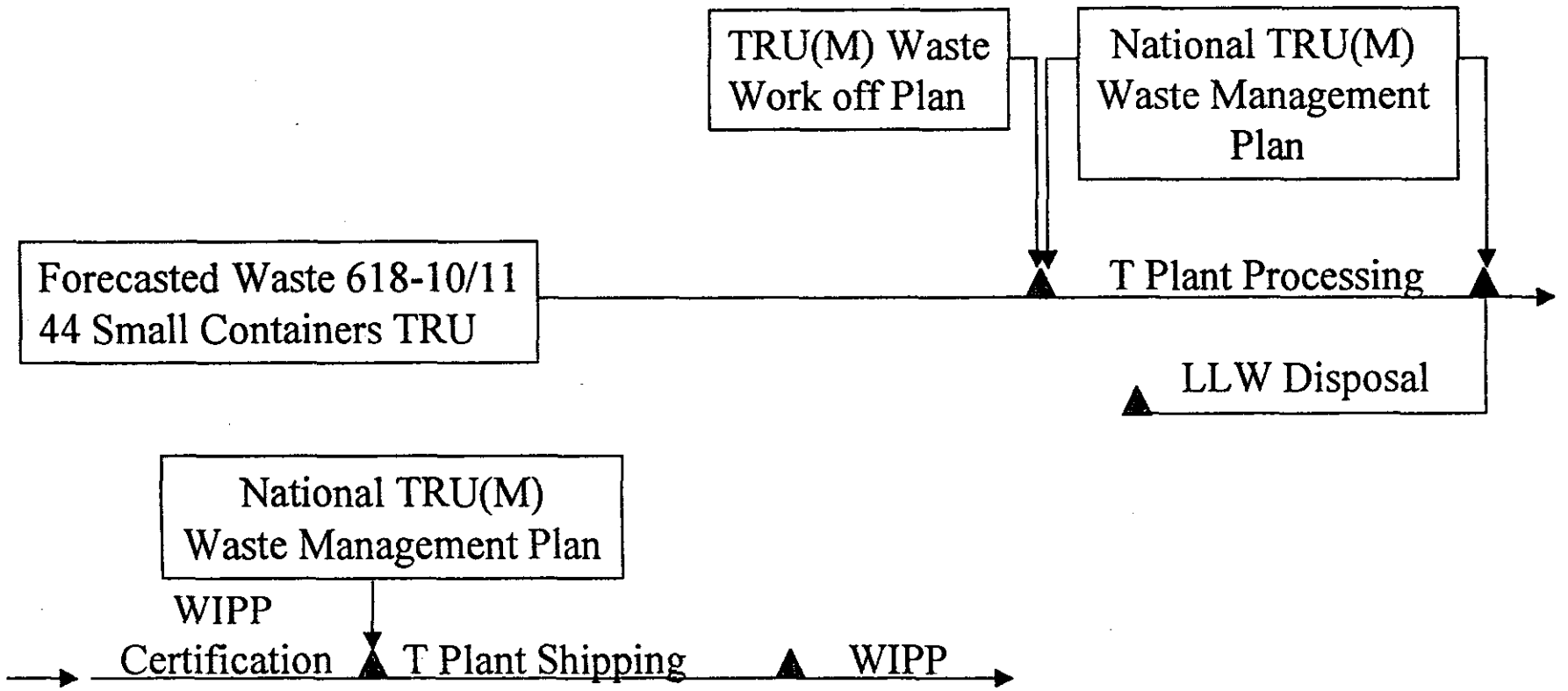
Process Flow
M-91-06-T01; M-91-08-T01 TRU Waste Streams

Planned Capability – Remote Handled



Process Flow
M-91-06-T01; M-91-08-T01 TRU Waste Streams

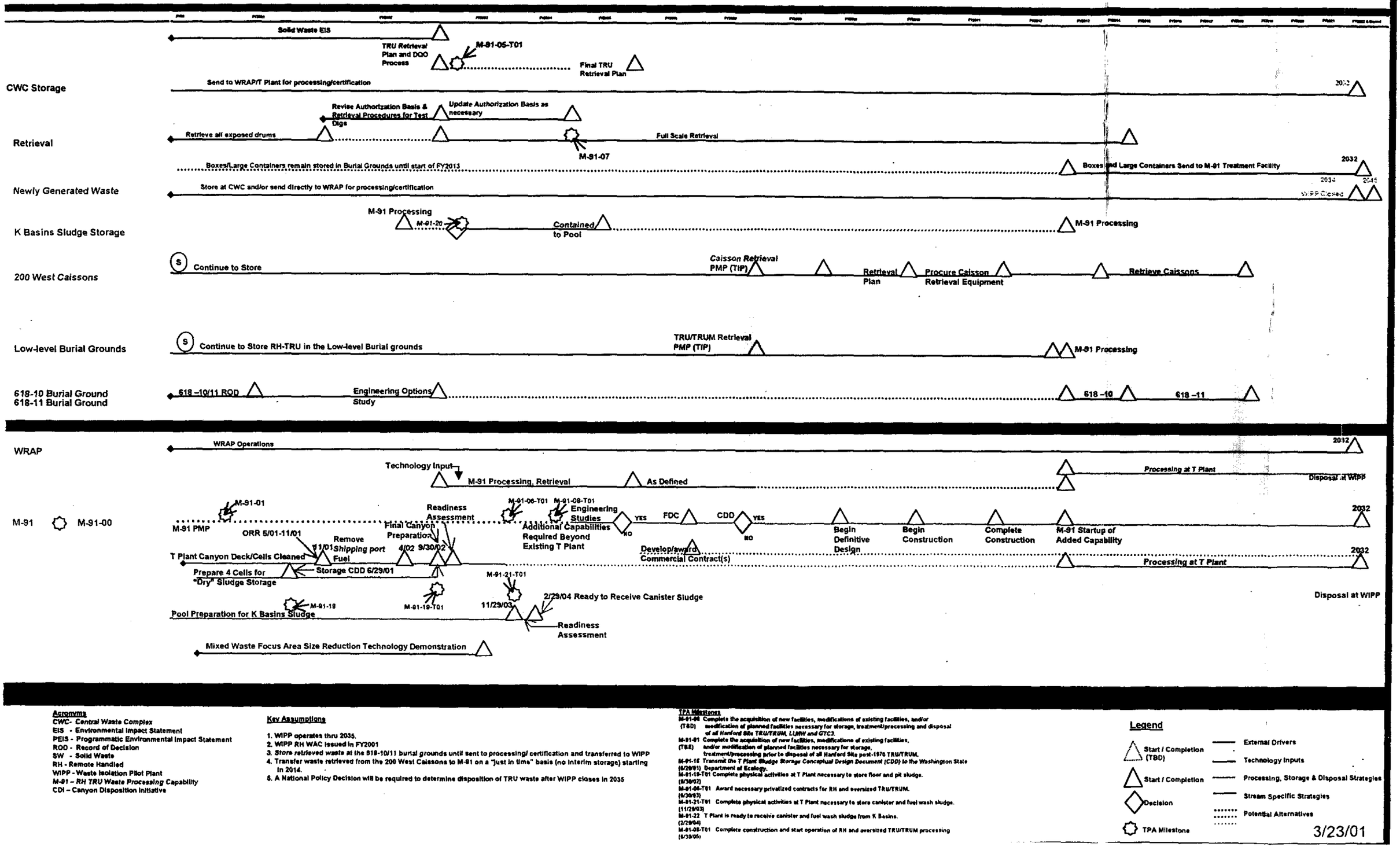
Planned Capability – Remote Handled



FY2001

M-91 TRU/TRUM Waste Processing Activities

Fluor Hanford



Acronyms

CWC- Central Waste Complex
EIS - Environmental Impact Statement
PEIS - Programmatic Environmental Impact Statement
ROD - Record of Decision
SW - Solid Waste
RH - Remote Handled
WIPP - Waste Isolation Pilot Plant
M-91 – RH TRU Waste Processing Capability
CDI – Canyon Disposition Initiative

Key Assumptions

1. WIPP operates thru 2035.
2. WIPP RH WAC issued in FY2001
3. *Store retrieved waste at the 618-10/11 burial grounds until sent to processing/ certification and transferred to WIPP*
4. Transfer waste retrieved from the 200 West Caissons to M-91 on a "just in time" basis (no interim storage) starting in 2014.
5. A National Policy Decision will be required to determine disposition of TRU waste after WIPP closes in 2035

TPA Milestones

M-91-00 (TBD) Complete the acquisition of new facilities, modifications of existing facilities, and/or modification of planned facilities necessary for storage, treatment/processing and disposal of all Hanford Site TRU/TRUM, LLMW and GTC3.
M-91-01 (TBD) Complete the acquisition of new facilities, modifications of existing facilities, and/or modification of planned facilities necessary for storage, treatment/processing prior to disposal of all Hanford Site post-1970 TRU/TRUM.
M-91-16 (6/29/01) Transmit the T Plant Sludge Storage Conceptual Design Document (CDD) to the Washington State Department of Ecology.
M-91-19-T01 (6/30/02) Complete physical activities at T Plant necessary to store floor and pit sludge.
M-91-06-T01 (6/30/03) Award necessary privatized contracts for RH and oversized TRU/TRUM.
M-91-21-T01 (11/29/03) Complete physical activities at T Plant necessary to store canister and fuel wash sludge.
M-91-22 (2/29/04) T Plant is ready to receive canister and fuel wash sludge from K Basins.
M-91-08-T01 (6/30/05) Complete construction and start operation of RH and oversized TRU/TRUM processing

Legend

- Start / Completion (TBD)
- Start / Completion
- Decision
- TPA Milestone
- External Drivers
- Technology Inputs
- Processing, Storage & Disposal Strategies
- Stream Specific Strategies
- Potential Alternatives

3/23/01

Attachment 2

FH-0101786

Matrix of the TPA Action Plan 11.5

(Consists of 3 pages including coversheet)

TPA Section 11.5, Project Management Plan Requirements	M-91 Project Management Plan
• Project Goals and Objectives: a brief and concise statement documenting project objectives and requirements.	The "Introduction" addresses goals and objectives of the project.
• Background: A description of key history, considerations, actions, and decisions leading to establishment of the project schedule. Elements will include the following:	
i. Physical information covering each identifiably different waste stream component (e.g. current inventories, component generation projections and component characterization data);	"Transuranic Waste Streams" Section, page 12, describes the streams; Appendix A quantifies each stream.
ii. Discussion of current commercial disposition activities if any;	The "Transuranic Waste Processing Capabilities" Section, pages 19 and 20, identifies that no commercial disposition activities are planned.
iii. A discussion of component and stream stability, and known and suspected instances of contaminant migration;	The "Background" Section, pages 6 through 9, and "Transuranic Waste Streams" Section, pages 13 and 14, discuss container integrity and project impacts.
iv. A summary of (and appropriate citation for) any earlier evaluation of management and disposition options for each waste stream; and,	The "Background" Section, pages 6 through 9, discusses options from the HDW-EIS and the Solid Waste and Materials Systems Alternatives Study (M-33)
v. A discussion of specific applicable regulatory requirements, and expected impacts to the project.	The "Transuranic Waste Hanford Federal Facility Agreement and Consent Order Milestones" Section, pages 9 through 12, delineates the applicable requirements.
• Project Scope: A concise definition of the project including:	
i. A description of the facility(s)/units(s) clearly delineating the physical boundaries of the project;	The "Transuranic Waste Processing Capabilities" Section, pages 17 through 22, describes the scope for the WRAP, T-Plant and retrieval facilities.
ii. A description of the planned approach (i.e. actions) clearly delineating the action boundaries of the project;	The "Transuranic waste Processing Capabilities "Section, pages 17 through 22, identifies the project scope.
iii. A top-level work breakdown structure (WBS) with an appended WBS dictionary which includes a brief description of each WBS element; and,	The WBS is not included in the PMP at this time as it would be more appropriate after the ongoing baseline exercise is completed and the Master Schedules and issued.
iv. Projected TSD capability relevant to management and disposition of each component. Capability information will include performance and specification requirements and projected capacity needs.	The "Transuranic Waste Processing Capabilities" Section, pages 17 through 22, describes the scope of the facilities related to the waste streams; Appendix B provides the process flow diagrams for each stream.
• Project Constraints, including established Agreement milestones: A concise description of externally established schedule requirements (e.g. performance specifications, specified start date(s), finish date(s), or logical relationship) with an identification of their source(s) for the	The "Transuranic Waste Hanford Federal Facility Agreement and Consent Order Milestones" Section, pages 9 through 12, delineates the applicable requirements.

TPA Section 11.5, Project Management Plan Requirements	M-91 Project Management Plan
project.	
• Schedule and Critical Path Analysis: A logic-tied life-cycle schedule including major and interim milestones for top-level work breakdown structure (WBS) and the project critical path. This is typically displayed as a milestone and critical path item listing and as an appended GANT chart.	A critical path analysis or GANT charts are not included now as it would be more appropriate after ongoing baselining exercises are completed and Master Schedules are issued. Lower level implementing schedules will then be updated to reflect the Master Schedules.
• Key deliverables/Products: A description of key deliverables and products resulting from each top-level WBS element including critical performance parameters.	See the comment regarding Work Breakdown Structure.
• Performance Measurement: Documentation and description of specific performance measures (e.g. milestones and accomplishments) necessary to assess progress toward achieving project and management plan objectives.	See the comment regarding Work Breakdown Structure.
• Project Control: Identification of requirements and a summary description of the approach for each of the following:	
i. Project interface control (i.e. Site-Wide Systems Engineering); and,	The "Transuranic Waste Stream" Section, pages 12 through 17, provides through the Solid Waste Integrated Forecast Technical Report, waste forecast interface control with each waste generator.
ii. Reporting and notification requirements and processes.	The referenced "Hanford Waste Management Strategic Plan" annual updates provide the vehicle for updating plans and requirements.
• Change Management: Identification of change control requirements (e.g. thresholds). To include a summary description of the change control process, participants including their roles and responsibilities, and documentation.	The referenced "Solid Waste Integrated Forecast Technical Report" and Hanford Waste Management Program Strategic Plan" are both updated annually and are formally approved.